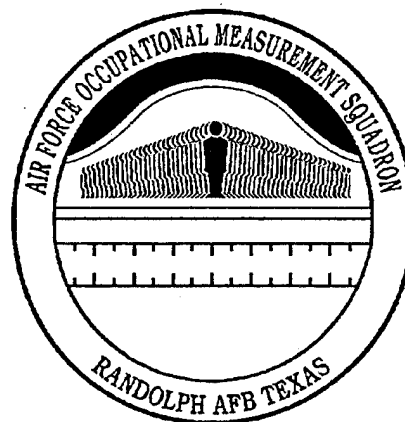




**UNITED STATES
AIR FORCE**



OCCUPATIONAL SURVEY REPORT

BIOMEDICAL EQUIPMENT

AFSC 4A2X1

AFPT 90-4A2-034

FEBRUARY 1996

19960416 008

**OCCUPATIONAL ANALYSIS PROGRAM
AIR FORCE OCCUPATIONAL MEASUREMENT SQUADRON
AIR EDUCATION and TRAINING COMMAND
1550 5th STREET EAST
RANDOLPH AFB, TEXAS 78150-4449**

APPROVED FOR PUBLIC RELEASE; DISTRIBUTION UNLIMITED

DISTRIBUTION FOR AFSC 4A2X1 OSR

| | <u>OSR</u> | <u>ANL</u> <u>EXT</u> | <u>TNG</u> <u>EXT</u> | <u>JOB</u> <u>INV</u> |
|--|------------|--------------------------|--------------------------|--------------------------|
| AFOMS/OMDQ | 1 | | | |
| AFOMS/OMYXL | 10 | | 5 | 10 |
| AL/HRMM | 2 | | | |
| ARMY OCCUPATIONAL SURVEY BRANCH | 1 | | | |
| CCAF/AYX | 1 | | | |
| DEFENSE TECHNICAL INFORMATION CENTER | 2 | | | |
| HQ ACC/DPTTF | 3 | | 3 | |
| HQ AETC/DPAEE | 3 | | 3 | |
| HQ AETC/SGAT | 2 | | 1 | |
| HQ AFMC/DPUE | 3 | | 3 | |
| HQ AFPC/DPMRAD2 | 1 | | | |
| HQ AFPC/DPPAPC | 1 | | | |
| HQ AFSPC/DPAE | 3 | | 3 | |
| HQ AMC/DPAET | 1 | | | |
| HQ PACAF/DPAET | 3 | | 3 | |
| HQ AFMLO/FOMM (1423 SULTAN DRIVE, FT DETRICK MD 21702-5006) | 1 | | 1 | |
| HQ USAFE/DPATTJ | 3 | | 3 | |
| HQ USMC/STANDARDS BRANCH | 1 | | | |
| NAVMAC | 1 | | | |
| 384 TRS/HTSR (925 MISSILE ROAD, SHEPPARD AFB TX 76311-2245) | 6 | 1 | 6 | 6 |
| 882 TSS/TSOXC (925 MISSILE ROAD, SHEPPARD AFB TX 76311-2245) | 1 | | 1 | |

TABLE OF CONTENTS

| | <u>PAGE NUMBER</u> |
|---|-------------------------------|
| PREFACE | vi |
| SUMMARY OF RESULTS | viii |
| INTRODUCTION | 1 |
| Background..... | 1 |
| SURVEY METHODOLOGY | 2 |
| Inventory Development..... | 2 |
| Survey Administration | 2 |
| Survey Sample..... | 3 |
| Task Factor Administration..... | 4 |
| SPECIALTY JOBS (Career Ladder Structure)..... | 5 |
| Overview of Specialty Jobs..... | 5 |
| Group Descriptions..... | 7 |
| Comparison of Current Jobs to Previous Survey Findings | 10 |
| ANALYSIS OF DAFSC GROUPS | 13 |
| Skill-Level Descriptions..... | 13 |
| Summary..... | 14 |
| ANALYSIS OF AFMAN 36-2108 <i>SPECIALTY DESCRIPTIONS</i>..... | 24 |
| TRAINING ANALYSIS | 24 |
| First-Enlistment Personnel | 24 |
| Training Emphasis (TE) and Task Difficulty (TD) Data | 33 |
| Specialty Training Standard (STS)..... | 40 |
| Plan of Instruction (POI)..... | 41 |
| JOB SATISFACTION ANALYSIS | 41 |
| Write-In Comments..... | 41 |
| IMPLICATIONS..... | 46 |

THIS PAGE INTENTIONALLY LEFT BLANK

TABLE OF CONTENTS
(Tables, Figures, Appendices)

| | <u>PAGE NUMBER</u> |
|----------|---|
| TABLE 1 | COMMAND DISTRIBUTION OF 4A2X1 PERSONNEL 3 |
| TABLE 2 | PAYGRADE DISTRIBUTION OF SURVEY SAMPLE 4 |
| TABLE 3 | RELATIVE PERCENT TIME SPENT ON DUTIES BY SPECIALTY JOBS 11 |
| TABLE 4 | SELECTED BACKGROUND DATA FOR SPECIALTY JOBS 12 |
| TABLE 5 | COMPARISON OF JOB GROUPS IN CURRENT STUDY VERSUS 1989 STUDY 13 |
| TABLE 6 | DISTRIBUTION OF DAFSC GROUP MEMBERS ACROSS SPECIALITY JOBS (PERCENT RESPONDING) 15 |
| TABLE 7 | RELATIVE PERCENT TIME SPENT ON DUTIES BY DAFSC GROUPS 16 |
| TABLE 8 | REPRESENTATIVE TASKS PERFORMED BY 4A231 PERSONNEL 17 |
| TABLE 9 | REPRESENTATIVE TASKS PERFORMED BY 4A251 PERSONNEL 18 |
| TABLE 10 | TASKS WHICH BEST DIFFERENTIATE BETWEEN DAFSCs 4A231 AND 4A251 PERSONNEL (PERCENT MEMBERS PERFORMING) 19 |
| TABLE 11 | REPRESENTATIVE TASKS PERFORMED BY 4A271 PERSONNEL 20 |
| TABLE 12 | TASKS WHICH BEST DIFFERENTIATE BETWEEN DAFSCs 4A251 AND 4A271 PERSONNEL (PERCENT MEMBERS PERFORMING) 21 |
| TABLE 13 | REPRESENTATIVE TASKS PERFORMED BY 4A291/4A200 COMBINED PERSONNEL 22 |
| TABLE 14 | TASKS WHICH BEST DIFFERENTIATE BETWEEN DAFSCs 4A271 AND 4A291/4A200 PERSONNEL (PERCENT MEMBERS PERFORMING) 23 |
| TABLE 15 | RELATIVE PERCENT TIME SPENT ON DUTIES BY FIRST-ENLISTMENT PERSONNEL (N=67) 26 |
| TABLE 16 | REPRESENTATIVE TASKS PERFORMED BY 4A2X1 FIRST-ENLISTMENT PERSONNEL (N=67) 27 |
| TABLE 17 | MEDICAL TESTING EQUIPMENT USED BY 30 PERCENT OR MORE FIRST- ENLISTMENT AFSC 4A2X1 PERSONNEL (PERCENT RESPONDING) 28 |
| TABLE 18 | MEDICAL EQUIPMENT MAINTAINED BY 30 PERCENT OR MORE FIRST- ENLISTMENT AFSC 4A2X1 PERSONNEL (PERCENT RESPONDING) 29-32 |
| TABLE 19 | TASKS RATED HIGHEST IN TRAINING EMPHASIS 34 |
| TABLE 20 | TASKS RATED HIGHEST IN TASK DIFFICULTY 35 |

TABLE OF CONTENTS (CONTINUED)
(Tables, Figures, Appendices)

| | <u>PAGE NUMBER</u> |
|---|-------------------------------|
| TABLE 21 EXAMPLES OF STS ELEMENTS NOT SUPPORTED BY SURVEY DATA | 36-38 |
| TABLE 22 EXAMPLES OF TECHNICAL TASKS PERFORMED BY 20 PERCENT OR MORE GROUP MEMBERS AND NOT REFERENCED TO THE STS..... | 39 |
| TABLE 23 COMPARISON OF JOB SATISFACTION INDICATORS BY TAFMS GROUPS (PERCENT MEMBERS RESPONDING) | 43 |
| TABLE 24 COMPARISON OF CURRENT SURVEY AND 1989 TAFMS GROUPS (PERCENT MEMBERS RESPONDING) | 44 |
| TABLE 25 COMPARISONS OF JOB SATISFACTION INDICATORS BY SPECIALTY JOBS (PERCENT MEMBERS RESPONDING) | 45 |
| FIGURE 1 OVERVIEW OF SPECIALTY JOBS (N=431) | 6 |
| FIGURE 2 FIRST-ENLISTMENT PERSONNEL JOBS (N=67) | 25 |
| APPENDIX A SELECTED REPRESENTATIVE TASKS PERFORMED BY SPECIALTY JOB GROUPS | 47 |

PREFACE

This report presents the results of an Air Force Occupational Survey of the Biomedical Equipment career ladder, Air Force Specialty Code 4A2X1. Authority for conducting occupational surveys is contained in AFI 36-2623. Computer products used in this report are available for use by operations and training officials.

The survey instrument was developed by Captain Carol A. Owen (CAF), Inventory Development Specialist, with computer programming support furnished by Mrs. Jeanie Guesman and administrative support provided by Mr. Richard G. Ramos. 2Lt Joseph D. Dyer, Occupational Analyst, analyzed the data and wrote the final report. This report has been reviewed and approved by Mr. Daniel E. Dreher, Chief, Airman Analysis Section, Occupational Analysis Flight, Air Force Occupational Measurement Squadron (AFOMS).

Copies of this report are distributed to Air Staff sections, major commands, and other interested training and management personnel. Additional copies are available upon request to AFOMS, Attention: Chief, Occupational Analysis Flight (OMY), 1550 5th Street East, Randolph Air Force Base, Texas 78150-4449 (DSN 487-6623).

RICHARD C. OURAND, JR., Lt Col, USAF
Commander
Air Force Occupational Measurement Sq

JOSEPH S. TARTELL
Chief, Occupational Analysis Flight
Air Force Occupational Measurement Sq

THIS PAGE INTENTIONALLY LEFT BLANK

SUMMARY OF RESULTS

1. Survey Coverage: The Biomedical Equipment career ladder was surveyed to provide current job and task data. Survey results are based on responses from 431 members (75 percent of the total assigned personnel selected for survey). The sample satisfactorily represents the overall career ladder population.
2. Specialty Jobs: One cluster (including four jobs) and three independent jobs (IJ) were identified in the career ladder structure analysis. Seventy-five percent of the survey sample performed the core job of Biomedical Equipment Maintenance. These personnel maintained a vast array of biomedical and support equipment. The remaining three IJs are related to supervisory, managerial, and training functions.
3. Career Ladder Progression: Skill-level progression for members of this AFSC is typical of most career ladders. Three-skill level personnel almost exclusively spend their time performing technical tasks involving maintenance of a wide variety of biomedical and support equipment. At the 5-skill level, personnel are still heavily involved with technical task performance, but become involved in instructor and facility management positions. Seven-skill level members are much more involved in supervisory and facility management positions, yet half remain in technical maintenance positions. Nine-skill level and CEM personnel are greatly involved in supervision and some facility management.
4. AFMAN 36-2108 Specialty Description: The description accurately describes the technical and supervisory aspects of jobs at the various levels.
5. Training Analysis: A comprehensive review of the STS found that most paragraphs were supported by the survey data. However, several paragraphs need to be reviewed for possible fine-tuning of content and 3-skill level proficiency codes. The Plan of Instruction was not covered in this report due to recent changes being worked at the technical school.
6. Job Satisfaction: Job satisfaction appears to be extremely high among most personnel. Only Facility Manager incumbents showed any major problems related to their job satisfaction, especially in the perceived utilization of training.
7. Implications: Overall, survey data for the Biomedical Equipment Maintenance career ladder reflect a well functioning career ladder. Seventy-five percent of the job incumbents perform a core job relating to maintenance of various medical equipment across the Air Force. Good career ladder progression can be seen as one moves from the 3-skill level to the 9- or CEM-skill level. Job satisfaction appears to be extremely high among most personnel. A comprehensive review of the STS found that most paragraphs were supported by the survey data. However, several paragraphs need to be reviewed for possible fine-tuning of content and 3-skill level proficiency codes.

THIS PAGE INTENTIONALLY LEFT BLANK

**OCCUPATIONAL SURVEY REPORT (OSR)
BIOMEDICAL EQUIPMENT CAREER LADDER
(AFSC 4A2X1)**

INTRODUCTION

This is a report of an occupational survey of the Biomedical Equipment career ladder completed by the Air Force Occupational Measurement Squadron (AFOMS). This data will be utilized to evaluate the AFMAN 36-2108 *Specialty Description* and training documents. The last OSR was published in January 1989.

Background

As described in the AFMAN 36-2108 *Specialty Description*, dated 31 October 1994, Biomedical Equipment members install, inspect, repair, and modify biomedical equipment and support systems. Members perform prepurchase evaluations of medical devices and advise on operational theory, underlying physiological principles, and safe clinical applications of biomedical equipment. Members implement organizational maintenance support for all medical devices used within the medical treatment facility, medical research laboratories, air transportable hospitals and clinics, and contingency hospitals. AFSC 4A2X1 airmen provide technical guidance and intermediate maintenance support on medical equipment systems when assigned to a regional Medical Equipment Repair Center, and direct the facility management program when assigned.

Entry into the career ladder currently requires an Armed Services Vocational Aptitude Battery Electronic score of 67. The sequence of technical training for this AFSC begins with course L3AQR4A231-800, Electronic Principles, a 47-day course taught at Lackland AFB TX. Upon completion of Electronic Principles, students proceed to Biomedical Equipment Apprentice Course J3ABR4A231-001 (34 weeks) at Sheppard AFB TX. This course provides technical training for Biomedical Equipment Apprentice personnel to include clinical application, operation, inspection, maintenance, and modification of a wide variety of biomedical equipment systems used in fixed and mobile medical and dental treatment facilities of the Air Force.

APPROVED FOR PUBLIC RELEASE; DISTRIBUTION UNLIMITED

SURVEY METHODOLOGY

Inventory Development

The data collection instrument for this occupational survey was USAF Job Inventory (JI) Air Force Personnel Test 90-4A2-034, dated 24 October 1993. A tentative task list was prepared after reviewing pertinent career ladder publications and directives, pertinent tasks from the previous survey instrument, and data from the last OSR. The preliminary task list was refined and validated through personal interviews with 24 subject-matter experts (SMEs) at the technical training location and at the following installations:

| <u>BASE</u> | <u>UNIT VISITED</u> |
|-----------------|---------------------|
| Sheppard AFB TX | 384 TRS/HTSR |
| Travis AFB CA | DGMC/SGLE |
| Lackland AFB TX | WHMC/HSLM |
| Randolph AFB TX | 12 MEDGP/SG |
| Brooks AFB TX | AL/DOJM |

The resulting JI contains a comprehensive listing of 1,274 tasks grouped under 10 duty headings and a background section requesting such information as grade, duty title, organizational level, type of facility where employed, testing and calibration equipment used, and equipment maintained.

Survey Administration

From March through July 1995, Base Training Offices administered the inventory to 496 eligible AFSC 4A2X1 personnel. To qualify for the survey, personnel were required to hold a duty AFSC of 4A231, 4A251, 4A271, 4A291, or 4A200. Excluded from the survey were personnel in PCS, student, or hospital status, or with less than 6 weeks on the job. Job incumbents were selected from a computer-generated mailing list obtained from personnel data tapes maintained by the Air Force Personnel Center, Randolph AFB TX.

Each individual who completed the inventory first completed an identification and biographical information section and then checked each task performed in his or her current job. After checking all tasks performed, each member then rated each of these tasks on a 9-point

scale, showing relative time spent on that task, as compared to all other tasks checked. The ratings ranged from 1 (very small amount time spent) through 5 (about average time spent) to 9 (very large amount time spent).

To determine relative time spent for each task checked by a respondent, all of the incumbent's ratings are assumed to account for 100 percent of his or her time spent on the job and are summed. Each task rating is then divided by the total task ratings and multiplied by 100 to provide a relative percentage of time spent for each task. This procedure provides a basis for comparing tasks in terms of both percent members performing and average percent time spent.

Survey Sample

Personnel were selected to participate in this survey so as to ensure an accurate representation across major commands (MAJCOM) and military paygrade groups. All eligible AFSC 4A2X1 personnel were mailed survey booklets. Table 1 reflects the percentage distribution, by MAJCOM, of assigned AFSC 4A2X1 personnel as of March 1995. The 431 respondents in the final sample represent 75 percent of the total assigned personnel. Table 2 reflects the paygrade distribution for these AFSC 4A2X1 personnel. The survey sample is considered to be a satisfactory representation of the career ladder population.

TABLE 1

COMMAND DISTRIBUTION OF AFSC 4A2X1 PERSONNEL

| COMMAND | PERCENT OF ASSIGNED* | PERCENT OF SAMPLE |
|------------|-------------------------|----------------------|
| AETC | 27 | 28 |
| ACC | 18 | 19 |
| AMC | 17 | 16 |
| AFMC | 12 | 14 |
| USAFE | 11 | 9 |
| PACAF | 9 | 9 |
| AFSPACECOM | 3 | 4 |
| OTHER | 3 | 1 |
| TOTAL | 100 | 100 |

TOTAL ASSIGNED* = 575

TOTAL SURVEYED** = 496

TOTAL IN SURVEY SAMPLE = 431

PERCENT OF ASSIGNED IN SAMPLE = 75%

PERCENT OF SURVEYED IN SAMPLE = 87%

* Assigned strength as of 1 March 1995

** Excludes personnel in PCS, student, or hospital status, or less than 6 weeks on the job

TABLE 2
PAYGRADE DISTRIBUTION OF SURVEY SAMPLE

| GRADE | PERCENT OF ASSIGNED* | PERCENT OF SAMPLE |
|-----------|-------------------------|----------------------|
| E-1 - E-3 | 8 | 8 |
| E-4 | 28 | 27 |
| E-5 | 30 | 32 |
| E-6 | 18 | 17 |
| E-7 | 14 | 13 |
| E-8 | 1 | 2 |
| E-9 | 1 | 1 |

* Assigned strength as of March 1995

Task Factor Administration

While most participants in the survey process completed a USAF JI, selected senior AFSC 4A2X1 personnel were also asked to complete booklets rendering judgments on task training emphasis (TE) or task difficulty (TD). The TE and TD booklets were processed separately from the JIs. The information gained from these task factor data is used in various analyses and is a valuable part of the training decision process.

TE is a rating of the amount of emphasis that should be placed on tasks in entry-level training. The 51 senior AFSC NCOs who completed a TE booklet were asked to select tasks they felt required some sort of structured training for entry-level personnel, and then indicate how much training emphasis these tasks should receive, from 1 (extremely low emphasis) to 9 (extremely high emphasis). Structured training is defined as training provided at resident technical schools, field training detachments, mobile training teams, formal on-the-job training (OJT), or any other organized training method. Interrater agreement from these 51 raters was acceptable, having strong agreement among the raters. The average TE rating was 2.28, with a standard deviation of 1.40. Any task with a TE rating of 3.68 or above is considered to have a high TE.

TD is an estimate of the amount of time needed to learn how to do each task satisfactorily. The 50 senior NCOs who completed TD booklets were asked to rate the difficulty of each task using a 9-point scale (extremely low to extremely high). Interrater reliability was acceptable, with high agreement. Ratings were standardized so tasks have an average difficulty of 5.00 and a standard deviation of 1.00. Any task with a TD rating of 6.00 or above is considered to be difficult to learn.

When used in conjunction with the primary criterion of percent members performing, TE and TD ratings can provide insight into first-enlistment personnel training requirements. Such insights may suggest a need for lengthening or shortening portions of instruction supporting entry-level jobs.

SPECIALTY JOBS (Career Ladder Structure)

The first step in the analysis process is to identify the structure of the career ladder in terms of the jobs performed by the respondents. Comprehensive Occupational Data Analysis Programs assist by creating an individual job description for each respondent based on the tasks performed and relative amount of time spent on the tasks. A hierarchical clustering program compares all the individual job descriptions, locates those with the most similar tasks performed and time spent on tasks, and combines them to form a stage in the clustering sequence. In successive stages, new members are added to the initial group or new groups are formed based on the similarity of tasks performed and time spent. This process continues until as many respondents as possible are included in a group.

The basic group used in the hierarchical clustering process is the *Job*. When two or more jobs have a substantial degree of similarity in tasks performed and time spent on tasks, they are grouped together and identified as a *Cluster*. The structure of the career ladder is then defined in terms of clusters of jobs and independent jobs.

Overview of Specialty Jobs

The analysis procedure described above identified one cluster and three jobs within the survey sample. The division of jobs performed by DAFSC 4A2X1 personnel is illustrated in Figure 1, and a listing of those jobs is provided below. The group (GP) or stage (ST) number shown beside each title is a reference to computer-printed information; the number of personnel in each group or stage (N) is also shown.

**OVERVIEW OF SPECIALTY JOBS
(N = 431)**

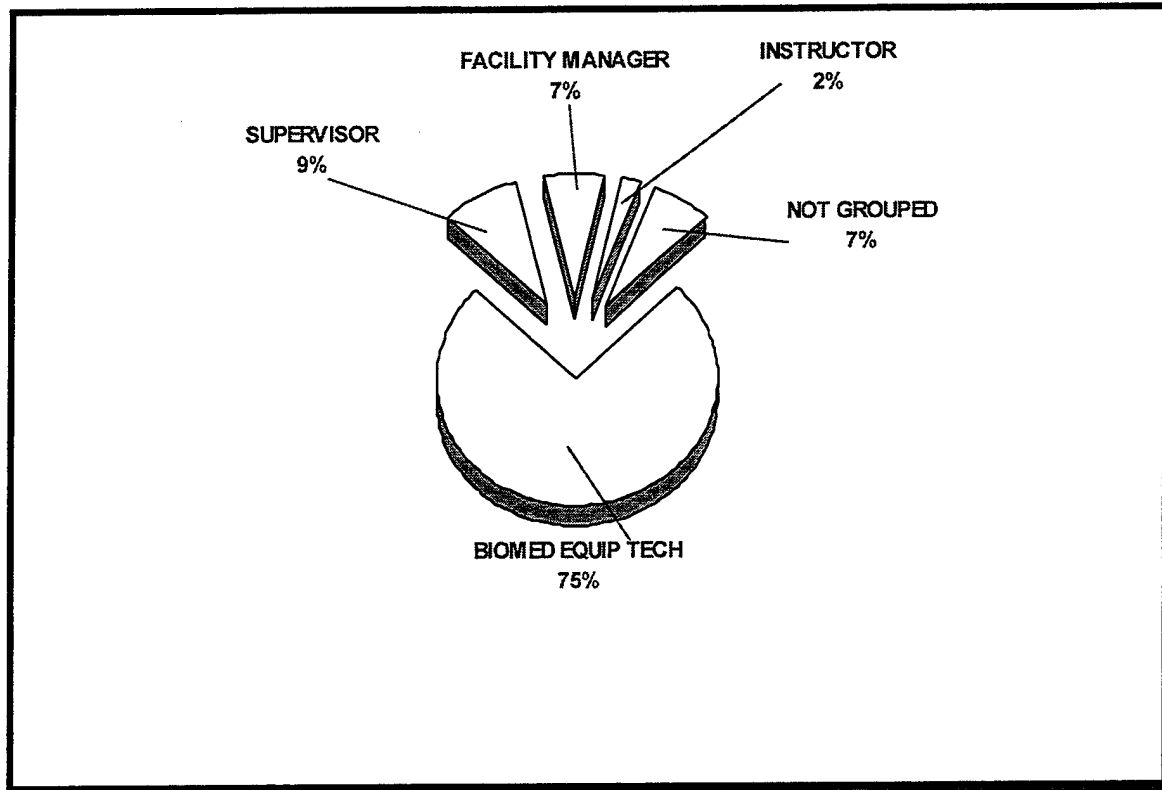


FIGURE 1

- I. BIOMEDICAL EQUIPMENT TECHNICIAN CLUSTER (ST016, N=321)
 - A. Dental Equipment Technician (ST056)
 - B. X-Ray Technician (ST049)
 - C. Medical Readiness Technician (ST142)
 - D. Clinic Technician (ST090)
- II. SUPERVISOR JOB (ST030, N=38)
- III. FACILITY MANAGER JOB (ST070, N=31)
- IV. INSTRUCTOR JOB (ST028, N=9)

The respondents forming these jobs account for 93 percent of the survey sample. The remaining 7 percent are performing tasks or a series of tasks which do not group with any of the defined jobs. Examples of job titles for these people include NCOIC Technical Support, Hospital Safety Manager, CDC Writer, NCOIC Medical Technology Assessment, and NCOIC Space Utilization.

Group Descriptions

The following paragraphs contain brief descriptions of the clustered jobs identified through the career ladder structure analysis. Table 3 presents the relative time spent on duties by members of these specialty jobs. Selected background data for these jobs are provided in Table 4. Representative tasks for all the jobs are contained in Appendix A.

I. BIOMEDICAL EQUIPMENT TECHNICIAN CLUSTER (ST016, N=321). The 321 airmen forming the Biomedical Equipment Technician (BMET) cluster account for 75 percent of the survey sample and perform the largest number of tasks. They are responsible for the core work of the career ladder. Their responsibilities include maintaining a wide range of biomedical equipment; performance of various operational and preventive maintenance inspections of biomedical equipment; and isolation of malfunctions. These personnel are located across a wide variety of MAJCOMs. Typical of the average 401 tasks performed are:

- perform electrical safety tests on medical equipment
- perform initial inspection of new medical equipment
- order parts or components
- calibrate or verify calibration of defibrillators
- perform preventive maintenance on defibrillators
- perform preventive maintenance on automatic blood pressure cuffs
- isolate malfunctions within infusion pumps
- process equipment turn-ins
- maintain historical maintenance records
- repair electronic thermometers

Fifty-nine percent of these airmen hold the 5-skill level, while 23 percent have a 3-skill level. The average time in the career field is just over 6 years, with an average of a little over 9 years total time in service. This cluster contains the highest number of members in their first-enlistment (18 percent). The paygrades range from E-2 to E-5, with E-4 and E-5 being the predominant paygrades. Furthermore, 83 percent of these members report they are assigned to units within the CONUS.

Within this large cluster, four distinct jobs were identified and warrant discussion. These were the (1) Dental Equipment Technician job (ST056, N=6); the (2) X-Ray Technician job (ST049, N=18); the (3) Medical Readiness Technician job (ST142, N=5); and the (4) Clinic Technician job (ST090, N=39).

The six members of the Dental Equipment Technician job are involved in maintaining equipment used in a dental clinic setting. Tasks representative of this group include:

- repair dental fiber optic systems
- isolate malfunctions within dental fiber optic systems
- perform preventive maintenance on panoramic dental x-ray systems
- isolate malfunctions within dental operating systems
- perform preventive maintenance on dental fiber optic systems
- repair dental operating systems

Personnel in the X-Ray Technician job deal with maintaining radiological equipment almost exclusively. Tasks representing this 18 member job include:

- calibrate or verify calibration of three-phase x-ray systems
- calibrate or verify calibration of fluorimaging systems
- calibrate or verify calibration of x-ray generators
- repair fixed radiographic x-ray systems
- isolate malfunctions within fixed radiographic x-ray systems
- isolate malfunctions within three-phase x-ray systems

The Medical Readiness Technician personnel perform tasks involving maintenance of field equipment for air transportable hospitals and clinics. These six personnel may find themselves working in contingency hospitals and occasionally performing in mobility exercises. Tasks representing this group include:

- build up or tear down air transportable hospital (ATH) pallets
- set up field power distribution systems
- start up or shut down field heater/air-conditioner systems
- assemble or disassemble field medical equipment
- perform preventive maintenance on field surgical lamp systems
- set up field sanitary sinks

The 39 members of the Clinic Technician job perform roughly the same tasks as other BMETs, with the following exception: these 39 members all work in a clinic and therefore maintain fewer pieces of equipment, resulting in fewer numbers of tasks performed (367).

II. SUPERVISOR JOB (ST030, N=38). The 38 personnel that form this job account for 9 percent of the survey sample. Unlike the technically-oriented job of the BMETs, personnel of this job primarily perform supervisory and management tasks. Fifty-one percent of their job

time is spent in Duty A, Supervision, with an additional 20 percent spent on Duty C, Performing General Administrative and Supply Activities (see Table 3). Commonly performed tasks include:

- draft outgoing correspondence
- supervise Biomedical Equipment Craftsmen (4A271) (formerly AFSC 91870)
- analyze workload requirements
- review Air Force Medical Logistics Letters (AFMLLs)
- write EPRs
- interpret policies, directives, or procedures for subordinates
- determine work priorities
- supervise Biomedical Equipment Journeymen (4A251) (formerly AFSC 91850)
- schedule personnel for schools, temporary duty (TDY) assignments, or nontechnical training
- counsel personnel, other than for training

The predominant paygrade in this supervisory job is E-7. Their average time in service is 17 years, with an average of 11.5 years in the career field. Sixty-one percent of the personnel performing this job hold a 7-skill level, with an additional 18 percent holding a 9-skill level. As expected, 92 percent of personnel in this job report supervising one or more personnel. Seventy-six percent of group members report they are assigned to CONUS.

III. FACILITY MANAGER JOB (ST070, N=31). Seven percent of the survey sample is comprised of this 31 member job. Facility Managers are responsible for coordinating maintenance of the facilities, conducting facilities' inspections, and evaluating construction requirements. The facility manager acts as the mediator between contractors and the hospital commander, overseeing such areas as waste disposal, parking concerns, housekeeping, and many other issues. Commonly performed tasks include:

- evaluate facility maintenance
- complete AF Forms 332 (Base Civil Engineer Work Requests)
- submit work order requests to BCEs
- coordinate maintenance of facilities with other agencies
- coordinate maintenance functions with Civil Engineering or other maintenance activities
- direct maintenance of medical facility grounds
- coordinate telecommunications acquisition, installation, and maintenance

- conduct facility fire safety and security inspections
- evaluate construction requirements
- determine facility custodial service requirements

Facility Managers hold primarily a 7-skill level, as reported by 68 percent of these members. Facility Managers average a little more than 8 years and 6 months in the career field and nearly 15 years and 6 months total service. The predominant paygrades for this job are E-6 and E-7. Sixty-one percent of these personnel report being assigned to CONUS.

IV. INSTRUCTOR JOB (ST028, N=9). Representing the smallest job, these 9 members account for 2 percent of the survey sample. Personnel in this job are all assigned to Sheppard AFB TX and are responsible for providing formal training to career ladder incumbents. Not surprisingly, 67 percent of their time is spent in Duty B, Training. Commonly performed tasks include:

- conduct resident course classroom training
- develop lesson plans
- prepare training aids
- score tests
- administer tests
- write test questions
- maintaining training records, charts, or graphs
- evaluate progress of resident course students
- procure training aids, space, or equipment
- counsel trainees on training progress

Seventy-eight percent of these airmen hold the 5-skill level and the remaining 22 percent hold the 7-skill level. The predominant paygrade of this specialty job is E-5. The average time in the career field is a little more than 7 years and 4 months, with an average of nearly 9 years total service. Eleven percent report being within their first enlistment.

Comparison of Current Jobs to Previous Survey Findings

The results of the specialty job analysis were compared to those of the last Biomedical Equipment Maintenance OSR published in 1989. As shown in Table 5, three of the four jobs in the current study were also identified in 1989 and were comprised of nearly identical percentages. The two survey sample sizes were nearly indistinguishable (440 versus 431), and a large group of technicians were identified as the core job in both studies.

TABLE 3

RELATIVE PERCENT TIME SPENT ON DUTIES BY SPECIALTY JOBS

| DUTIES | Biomedical Technician (ST016) (N=321) | Supervisor (ST030) (N=38) | Facility Manager (ST070) (N=31) | Instructor (ST028) (N=9) |
|---|--|---------------------------------|--|--------------------------------|
| A Supervision | 6 | 51 | 29 | 17 |
| B Training | 1 | 7 | 2 | 67 |
| C Performing General Administrative and Supply Activities | 8 | 20 | 13 | 9 |
| D Performing General Maintenance Activities | 4 | 3 | 2 | 4 |
| E Maintaining Diagnostic Equipment | 29 | 6 | 1 | 2 |
| F Maintaining Diagnostic Support Equipment | 16 | 3 | * | 1 |
| G Maintaining Therapeutic Equipment | 17 | 2 | * | * |
| H Maintaining Therapeutic Support Equipment | 16 | 2 | * | 0 |
| I Performing Medical Readiness Activities | 2 | 4 | * | 0 |
| J Performing Facilities Management Activities | 1 | 2 | 51 | * |

* Less than 1 percent

TABLE 4

SELECTED BACKGROUND DATA FOR SPECIALTY JOBS

| | Biomedical Technician | Supervisor | Facility Manager | Instructor |
|--|--------------------------|------------|---------------------|------------|
| NUMBER IN GROUP | 321 | 38 | 31 | 9 |
| PERCENT OF SAMPLE | 75% | 9% | 7% | 2% |
| PERCENT IN CONUS | 83% | 76% | 71% | 100% |
| DAFSC DISTRIBUTION: | | | | |
| 4A231 | 23% | 3% | 0% | 0% |
| 4A251 | 59% | 13% | 29% | 78% |
| 4A271 | 18% | 61% | 68% | 22% |
| 4A291 | 0% | 18% | 3% | 0% |
| 4A200 | 0% | 5% | 0% | 0% |
| PREDOMINANT GRADE(S) | E-4/E-5 | E-7 | E-6/E-7 | E-5 |
| AVERAGE MONTHS IN CAREER FIELD | 73 | 138 | 104 | 88 |
| AVERAGE MONTHS IN SERVICE | 113 | 214 | 185 | 106 |
| PERCENT IN FIRST ENLISTMENT (1-48 MOS TAFMS) | 18% | 0% | 3% | 11% |
| PERCENT SUPERVISING | 42% | 92% | 61% | 22% |
| AVERAGE NUMBER OF TASKS PERFORMED | 401 | 147 | 99 | 18 |

TABLE 5
COMPARISON OF JOB GROUPS IN CURRENT STUDY
VERSUS 1989 STUDY

| 1995 STUDY (N=431) | 1989 STUDY (N=440) |
|---|---|
| Biomedical Equipment Technician (75% of sample) | Biomedical Maintenance Specialist (79% of sample) |
| Biomedical Supervisor (9% of sample) | Biomedical Supervisor (9% of sample) |
| Facility Manager (7% of sample) | Not Identified |
| Instructor (2% of sample) | Technical Training Personnel (3% of sample) |

ANALYSIS OF DAFSC GROUPS

An analysis of DAFSC groups, in conjunction with the analysis of the career ladder structure, is an important part of each occupational survey. The DAFSC analysis identifies differences in tasks performed at the various skill levels. This information may then be used to evaluate how well career ladder documents, such as the AFMAN 36-2108 *Specialty Description* and the Career Field Education and Training Plan, reflect what career ladder personnel are actually doing in the field.

The distribution of skill-level groups across the career ladder jobs is displayed in Table 6, while Table 7 offers another perspective by displaying the relative percent time spent on each duty across the skill-level groups.

Skill-Level Descriptions

DAFSC 4A231. Representing 19 percent of the survey sample, these 81 airmen perform an average of 240 tasks. Ninety-three percent of these airmen are Biomedical Equipment Technicians (see Table 6).

Representative tasks performed by 3-skill level incumbents are listed in Table 8. Most tasks relate to Duty E (Maintaining Diagnostic Equipment), Duty G (Maintaining Therapeutic Equipment), and Duty H (Maintaining Therapeutic Support Equipment) (see Table 7).

DAFSC 4A251. Representing 52 percent of the survey sample (largest DAFSC group of the survey), these 222 airmen perform an average of 240 tasks. Most 5-skill level airmen (85 percent) are still Biomedical Equipment Technicians. However, 5-skill level personnel are also Facility Managers (4 percent), and Instructors (3 percent) (see Table 6).

Table 9 lists representative tasks performed by all 5-skill level personnel. Table 10 reflects those tasks which best differentiate 5-skill level personnel from their 3-skill level counterparts. The major difference among the two groups, as seen in Table 10, is that 5-skill level personnel perform a broader range of tasks, some being supervisory in nature.

DAFSC 4A271. The 117 members holding the 7-skill level represent 27 percent of the survey sample and perform an average of 162 tasks. Like their junior counterparts at the 3- and 5-skill levels, higher percentages of these personnel are working as Biomedical Equipment Technicians (49 percent), with an additional 20 percent working in the Supervisor Job. They are also represented in the Facility Manager specialty job (18 percent). Table 11 lists representative tasks performed by these airmen. Most of these tasks involve supervisory functions. Table 12 shows those tasks which best differentiate the 5- and 7-skill levels. As expected, the key difference is a much greater emphasis on supervisory functions at the 7-skill level.

DAFSC 4A291/4A200. Nine of the 11 members of this combined group are found within the Supervisor Job. The other two are in the BMET and Facility Manager positions. As seen in Table 13, these personnel are performing almost exclusively Duty A (Supervision) and some of Duty C (Performing General Administrative and Supply Activities). Tasks which best differentiate between the 9- and CEM-skill level are seen in Table 14. Clearly, the CEMs are more involved with supervisory related tasks (Duty A) than the 7-skill level which is performing a variety of more technically-oriented tasks.

Summary

Progression in this career ladder follows a regular pattern of highly technical job focus at the lower skill levels, with a broadening into supervision at the 7-skill level. Incumbents are performing primarily the core job of biomedical equipment maintenance at the 3- and 5-skill levels. Craftsmen at the 7-skill level are beginning to shift to supervision tasks, but a good deal of their job time is still spent in the technical arena. The 9-skill level and CEM personnel are primarily managers.

TABLE 6

DISTRIBUTION OF DAFSC GROUP MEMBERS ACROSS SPECIALTY JOBS
(PERCENT RESPONDING)

| <u>SPECIALTY JOBS</u> | DAFSC 4A231 (N=81) | DAFSC 4A251 (N=222) | DAFSC 4A271 (N=117) | DAFSC 4A291 (N=8) | DAFSC 4A200 (N=3) |
|--------------------------|--------------------------|---------------------------|---------------------------|-------------------------|-------------------------|
| I. Biomedical Technician | 93 | 85 | 49 | 0 | 33 |
| II. Supervisor | 1 | 2 | 20 | 88 | 67 |
| III. Facility Manager | 0 | 4 | 18 | 12 | 0 |
| IV. Instructor | 0 | 3 | 1 | 0 | 0 |
| Not Grouped | 6 | 6 | 12 | 0 | 0 |

TABLE 7

RELATIVE PERCENT TIME SPENT ON DUTIES BY DAFSC GROUPS

| DUTIES | DAFSC 4A231 (N=81) | DAFSC 4A251 (N=222) | DAFSC 4A271 (N=117) | DAFSC 4A291 (N=8) | DAFSC 4A200 (N=3) |
|---|--------------------------|---------------------------|---------------------------|-------------------------|-------------------------|
| A Supervision | 4 | 7 | 25 | 60 | 60 |
| B Training | * | 3 | 7 | 6 | 15 |
| C Performing General Administrative and Supply Activities | 10 | 8 | 13 | 18 | 8 |
| D Performing General Maintenance Activities | 5 | 4 | 3 | 1 | 4 |
| E Maintaining Diagnostic Equipment | 30 | 26 | 16 | 1 | 4 |
| F Maintaining Diagnostic Support Equipment | 13 | 15 | 9 | 1 | 3 |
| G Maintaining Therapeutic Equipment | 19 | 15 | 7 | 1 | 3 |
| H Maintaining Therapeutic Support Equipment | 16 | 15 | 8 | 1 | 1 |
| I Performing Medical Readiness Activities | 2 | 2 | 1 | 4 | 1 |
| J Performing Facilities Management Activities | 1 | 5 | 11 | 6 | 1 |

* Less than 1 percent

TABLE 8

REPRESENTATIVE TASKS PERFORMED BY 4A231 PERSONNEL

| TASKS | PERCENT MEMBERS PERFORMING (N=81) |
|---|--|
| D174 Perform electrical safety tests on medical equipment | 93 |
| E257 Perform preventive on pulse oximeters | 93 |
| G848 Calibrate or verify calibration of defibrillators | 90 |
| E255 Calibrate or calibration of pulse oximeters | 90 |
| D187 Solder electrical connections | 90 |
| G850 Perform preventive maintenance on defibrillators | 89 |
| E274 Perform preventive maintenance on automatic blood pressure cuffs | 88 |
| G820 Perform preventive maintenance on electric hospital beds | 88 |
| E225 Perform preventive maintenance on ECG monitors | 88 |
| G836 Perform preventive maintenance on infusion pumps | 88 |
| D178 Perform initial inspections of new medical equipment | 86 |
| E222 Calibrate or verify calibration of electrocardiogram (ECG) monitors | 86 |
| C119 Complete equipment condition tags | 85 |
| E276 Calibrate or verify calibration of blood pressure monitors | 85 |
| E405 Perform preventive maintenance on vital sign monitor | 85 |
| E272 Calibrate or verify calibration of automatic blood pressure cuffs | 85 |
| G834 Calibrate or verify calibration of infusion pumps | 85 |
| E278 Perform preventive maintenance on blood pressure monitors | 84 |
| E273 Isolate malfunctions within automatic blood pressure cuffs | 84 |
| E349 Perform preventive maintenance on electronic thermometers | 84 |
| C127 Locate stock numbers or components in manufacturers' parts manuals or supply publications | 83 |
| E403 Calibrate or verify calibration of vital sign monitors | 83 |
| E347 Calibrate or verify calibration of electronic thermometers | 83 |
| C137 Order parts or components | 80 |
| C145 Review Air Force Medical Logistics Letters (AFMLLs) | 77 |
| C118 Complete AF Forms 1763 (Medical Maintenance Work Order) | 72 |
| C132 Maintain medical maintenance work order files | 72 |
| C124 Input maintenance data | 64 |
| A12 Determine work priorities | 60 |
| C135 Make entries in work order logs | 48 |

TABLE 9
REPRESENTATIVE TASKS PERFORMED BY 4A251 PERSONNEL

| TASKS | PERCENT MEMBERS PERFORMING (N=222) |
|--|---|
| D174 Perform electrical safety tests on medical equipment | 85 |
| E257 Perform preventive maintenance on pulse oximeters | 84 |
| E255 Calibrate or verify calibration of pulse oximeters | 84 |
| C127 Locate stock numbers or components in manufacturers' parts manuals or supply publications | 82 |
| G848 Calibrate or verify calibration of defibrillators | 82 |
| G850 Perform preventive maintenance on defibrillators | 82 |
| D187 Solder electrical connections | 81 |
| E222 Calibrate or verify calibration of electrocardiogram (ECG) monitors | 81 |
| E274 Perform preventive maintenance on automatic blood pressure cuffs | 81 |
| E272 Calibrate or verify calibration of automatic blood pressure cuffs | 80 |
| E225 Perform preventive maintenance on ECG monitors | 80 |
| E349 Perform preventive maintenance on electronic thermometers | 80 |
| E347 Calibrate or verify calibration of electronic thermometers | 79 |
| C137 Order parts of components | 78 |
| C145 Review Air Force Medical Logistics Letters (AFMLLs) | 77 |
| H1082 Perform preventive maintenance on steam sterilizers | 77 |
| E403 Calibrate or verify calibration of vital signs monitors | 77 |
| E405 Perform preventive maintenance on vital signs monitors | 77 |
| E276 Calibrate or verify calibration of blood pressure monitors | 76 |
| D171 Pack or unpack medical equipment | 75 |
| D178 Perform initial inspections of new medical equipment | 75 |
| E278 Perform preventive maintenance on blood pressure monitors | 75 |
| H1083 Repair steam sterilizers | 73 |
| H1081 Isolate malfunctions within steam sterilizers | 73 |
| G836 Perform preventive maintenance on infusion pumps | 73 |
| C119 Complete equipment condition tags | 72 |
| C124 Input maintenance data | 61 |
| A12 Determine work priorities | 59 |
| A36 Evaluate new equipment | 58 |
| C146 Review or make entries on AF forms 601 (Equipment Action Request) | 57 |
| C135 Make entries in work order logs | 53 |

TABLE 10

TASKS WHICH BEST DIFFERENTIATE BETWEEN
DAFSCs 4A231 AND 4A251 PERSONNEL
(PERCENT MEMBERS PERFORMING)

| TASKS | DAFSC 4A231 (N=81) | DAFSC 4A251 (N=222) | DIFF |
|---|--------------------------|---------------------------|------|
| G820 Perform preventive maintenance on electric hospital beds | 88 | 63 | +25 |
| G819 Isolate malfunctions within electric hospital beds | 81 | 58 | +23 |
| C118 Complete AF Forms 1763 (Medical Maintenance Work Order) | 72 | 51 | +20 |
| G821 Repair electric hospital beds | 80 | 61 | +19 |
| G815 Calibrate or verify calibration of pneumatic tourniquets | 65 | 50 | +15 |
| H1108 Perform preventive maintenance on blood warmers | 65 | 51 | +15 |
| G825 Calibrate or verify calibration of hypo/hyperthermia units | 70 | 56 | +15 |
| G836 Perform preventive maintenance on infusion pumps | 88 | 73 | +14 |
| G877 Perform preventive maintenance on infant warmers | 69 | 55 | +14 |
| H1106 Calibrate or verify calibration of blood warmers | 63 | 49 | +14 |
| G883 Calibrate or verify calibration of transportable infant incubators | 63 | 49 | +14 |
| H1114 Perform preventive maintenance on surgical tables | 69 | 55 | +14 |
| E467 Isolate malfunctions within three-phase x-ray systems | 20 | 46 | -26 |
| C130 Maintain general correspondence with suspense files | 9 | 34 | -26 |
| D188 Solder or sweat plumbing connections | 23 | 48 | -25 |
| F705 Isolate malfunctions within ID cameras | 17 | 42 | -25 |
| F707 Repair ID cameras | 19 | 42 | -24 |
| F534 Install centrifuges, other than microhematocrit or refrigerated | 26 | 50 | -24 |
| H969 Repair dental furnaces | 27 | 50 | -23 |
| H1099 Isolate malfunctions within vacuum pumps | 20 | 43 | -23 |
| E469 Repair three-phase x-ray systems | 22 | 45 | -22 |
| A38 Evaluate personnel for compliance with performance standards | 11 | 33 | -22 |
| H1025 Repair laboratory shaking devices | 15 | 37 | -22 |
| A10 Counsel personnel, other than for training | 10 | 32 | -22 |

TABLE 11

REPRESENTATIVE TASKS PERFORMED BY 4A271 PERSONNEL

| TASKS | | PERCENT MEMBERS PERFORMING (N=117) |
|-------|--|---|
| C145 | Review Air Force Medical Logistics Letters (AFMLLs) | 86 |
| A12 | Determine work priorities | 79 |
| A1 | Analyze workload requirements | 74 |
| A78 | Write EPRs | 74 |
| A10 | Counsel personnel, other than for training | 74 |
| C121 | Draft outgoing correspondence | 70 |
| A54 | Interpret policies, directives, or procedures for subordinates | 66 |
| A38 | Evaluate personnel for compliance with performance standards | 66 |
| C146 | Review or make entries on AF Forms 601 (Equipment Action Request) | 66 |
| A61 | Plan equipment installations or modifications | 65 |
| A6 | Coordinate maintenance activities with other medical departments | 64 |
| A35 | Evaluate maintenance or use of workspace | 64 |
| A11 | Determine general logistics requirements, such as space, personnel, equipment, or supplies | 63 |
| A7 | Coordinate maintenance functions with Civil Engineering or other maintenance activities | 62 |
| A71 | Supervise Biomedical Equipment Journeymen (4A251) (Formerly AFSC 91850) | 62 |
| A65 | Plan work assignments | 62 |
| A25 | Establish Contractor services | 57 |
| C139 | Participate in hospital safety committee activities | 56 |
| A59 | Perform quality assurance evaluations of contractor performed services | 56 |
| C113 | Compile data for reports | 53 |
| C142 | Process equipment turn-ins | 53 |
| A42 | Evaluate safety or security programs | 52 |
| D169 | Maintain shop, hand, or power tools | 52 |
| A37 | Evaluate operator maintenance | 52 |
| B87 | Determine training requirements | 51 |
| C125 | Inventory equipment, tools, or supplies | 50 |
| C140 | Prepare cost estimates for replacement of equipment, repair parts, or supplies | 46 |
| A40 | Evaluate procedures for storage, inventory, or inspection of property items | 45 |
| C114 | Complete AF Forms 332 (Base Civil Engineer Work Request) | 44 |
| B90 | Direct or implement training programs | 43 |
| C154 | Validate Activity Back Order Report listings | 42 |

TABLE 12

TASKS WHICH BEST DIFFERENTIATE BETWEEN
DAFSCs 4A251 AND 4A271 PERSONNEL
(PERCENT MEMBERS PERFORMING)

| TASKS | DAFSC 4A251 (N=222) | DAFSC 4A271 (N=177) | DIFF |
|---|---------------------------|---------------------------|------|
| H955 Perform preventive maintenance on dental curing units | 68 | 30 | +38 |
| E257 Perform preventive maintenance on pulse oximeters | 84 | 47 | +37 |
| H1082 Perform preventive maintenance on steam sterilizers | 77 | 40 | +37 |
| E403 Calibrate or verify calibration of vital sign monitors | 77 | 40 | +37 |
| G808 Calibrate or verify calibration of electrosurgical equipment | 75 | 38 | +37 |
| E274 Perform preventive maintenance on automatic blood pressure cuffs | 81 | 45 | +36 |
| E301 Perform preventive maintenance on ophthalmoscopes | 68 | 32 | +36 |
| E255 Calibrate or verify calibration of pulse oximeters | 84 | 49 | +36 |
| E405 Perform preventive maintenance on vital sign monitors | 77 | 42 | +35 |
| F533 Calibrate or verify calibration of centrifuges, other than microhematocrit or refrigerated | 74 | 39 | +35 |
| E276 Calibrate or verify calibration of blood pressure monitors | 76 | 41 | +35 |
| G810 Perform preventive maintenance on electrosurgical equipment | 76 | 41 | +35 |
| E272 Calibrate or verify calibration of automatic blood pressure cuffs | 80 | 45 | +34 |
| A54 Interpret policies, directives, or procedures for subordinates | 23 | 66 | -43 |
| A10 Counsel personnel, other than for training | 32 | 74 | -42 |
| A78 Write EPRs | 33 | 74 | -41 |
| A68 Schedule personnel for schools, temporary duty (TDY) assignments, or nontechnical training | 14 | 55 | -41 |
| A67 Schedule leaves and passes | 16 | 56 | -40 |
| C121 Draft outgoing correspondence | 30 | 70 | -39 |
| A39 Evaluate personnel for promotion, demotion, reclassification, or special awards | 23 | 62 | -38 |
| A27 Establish performance standards | 17 | 56 | -38 |
| A2 Assign personnel to duty positions | 14 | 52 | -38 |
| A33 Evaluate budget requirements | 19 | 57 | -38 |
| A30 Draft budget requirements | 14 | 52 | -37 |

TABLE 13

REPRESENTATIVE TASKS PERFORMED BY 4A291/4A200 COMBINED PERSONNEL

| TASKS | PERCENT MEMBERS PERFORMING (N=11) |
|--|--|
| C121 Draft outgoing correspondence | 100 |
| A72 Supervise Biomedical Equipment Craftsmen (4A271) (formerly AFSC 91870) | 100 |
| A54 Interpret policies, directives, or procedures for subordinates | 100 |
| C139 Participate in hospital safety committee activities | 100 |
| A1 Analyze workload requirements | 100 |
| A63 Plan or prepare briefings | 100 |
| A33 Evaluate inspection report findings | 100 |
| A78 Write EPRs | 100 |
| A38 Evaluate personnel for compliance with performance standards | 100 |
| A52 Indorse enlisted performance reports | 100 |
| C145 Review Air Force Medical Logistics Letters (AFMLLs) | 100 |
| A12 Determine work priorities | 100 |
| A4 Conduct staff meetings | 100 |
| A39 Evaluate personnel for promotion , demotion, reclassification, or special awards | 100 |
| A34 Evaluate job or position descriptions | 100 |
| C113 Compile data for reports | 91 |
| A20 Direct development or maintenance of status indicators, such as boards, graphs, or charts | 91 |
| A32 Evaluate directives or operating procedures | 91 |
| C146 Review or make entries on AF Forms 601 (Equipment Action Request) | 91 |
| A41 Evaluate quality control procedures | 91 |
| A5 Coordinate equipment procurement with Director of Medical Logistics Management or Base Procurement Office | 91 |

TABLE 14

TASKS WHICH BEST DIFFERENTIATE BETWEEN
DAFSCs 4A271 AND 4A291/4A200 PERSONNEL
(PERCENT MEMBERS PERFORMING)

| TASKS | DAFSC 4A271 (N=177) | DAFSC 4A200/ 4A291 (N=11) | DIFF |
|--|---------------------------|------------------------------------|------|
| E464 Perform preventive maintenance on fixed dental x-ray systems, other than panoramic | 46 | 0 | +46 |
| E454 Perform preventive maintenance on panoramic dental x-ray systems | 45 | 0 | +45 |
| E430 Perform preventive maintenance on fixed radiographic x-ray systems | 45 | 0 | +45 |
| E465 Repair fixed dental x-ray systems, other than panoramic | 44 | 0 | +44 |
| C142 Process equipment turn-ins | 53 | 9 | +44 |
| D169 Maintain shop, hand, or power tools | 52 | 9 | +43 |
| D174 Perform electrical safety tests on medical equipment | 61 | 18 | +43 |
| E280 Calibrate or verify calibration of sphygmomanometers | 42 | 0 | +42 |
| C119 Complete equipment condition tags | 60 | 18 | +42 |
| C125 Inventory equipment, tools, or supplies | 50 | 9 | +41 |
| F679 Repair automatic dental x-ray film processors | 41 | 0 | +41 |
| G837 Repair infusion pumps | 40 | 0 | +40 |
| E282 Perform preventive maintenance on sphygmomanometers | 40 | 0 | +40 |
| A15 Develop organizational charts | 23 | 91 | -68 |
| A34 Evaluate job or position descriptions | 36 | 100 | -64 |
| A52 Indorse enlisted performance reports (EPRs) | 39 | 100 | -61 |
| A72 Supervise Biomedical Equipment Craftsmen (4A271) (formerly AFSC 91870) | 40 | 100 | -60 |
| A76 Update unit disaster preparedness plans or recall lists | 18 | 73 | -55 |
| A4 Conduct staff meetings | 45 | 100 | -55 |
| A69 Select individuals for training, other than specialty training | 39 | 91 | -52 |
| A3 Assign sponsors for incoming personnel | 39 | 91 | -52 |
| A75 Supervise civilians | 21 | 73 | -52 |
| A9 Coordinate medical maintenance activities with Air Force Medical Logistics Office (AFMLO) | 31 | 82 | -51 |

ANALYSIS OF AFMAN 36-2108 *SPECIALTY DESCRIPTION*

Survey data were compared to the AFMAN 36-2108 *Specialty Description* for Biomedical Equipment, dated 31 October 1994. The overall specialty description for the 3-, 5-, 7-, and combined 9- and CEM skill levels briefly describes the technical and supervisory nature of jobs at the various levels. The description also reflects the primary tasks and responsibilities discussed in the **SPECIALTY JOBS** section of this report. The AFMAN 36-2108 *Specialty Description* accurately describes the technical aspects of Biomedical Equipment maintenance.

TRAINING ANALYSIS

Occupational survey data is one of the many sources of information which can be used to assist in the development of a training program relevant to the needs of personnel in their first enlistment. Factors which may be used in evaluating training include the overall description of the job being performed by first-enlistment personnel and their overall distribution across career ladder jobs, percentages of first-job (1-24 months TAFMS) or first-enlistment (1-48 months TAFMS) members performing specific tasks, as well as TE and TD ratings (previously explained in the **SURVEY METHODOLOGY** section).

First-Enlistment Personnel

In this study, there are 67 members in their first enlistment (1-48 months TAFMS), representing 16 percent of the total survey sample. The jobs performed by these personnel are highly technical in nature, with nearly all of their relative duty time spent on tasks pertaining to the maintenance of diagnostic and therapeutic equipment and the related support equipment (see Figure 2).

Table 15 displays the relative percent of time spent on duties by first-enlistment personnel. Reviewing the table, it is clearly evident that most first-enlistment personnel are performing tasks under Duty E (Maintaining Diagnostic Equipment), Duty G (Maintaining Therapeutic Equipment), and Duty H (Maintaining Therapeutic Support Equipment).

Table 16 lists representative tasks performed by AFSC 4A2X1 first-enlistment personnel, while Table 17 lists all of the test equipment used by 30 percent or more of first-enlistment airmen. Table 18 lists medical equipment that 30 percent or more first-enlistment airmen perform maintenance on.

FIRST-ENLISTMENT PERSONNEL JOBS
(N = 67)

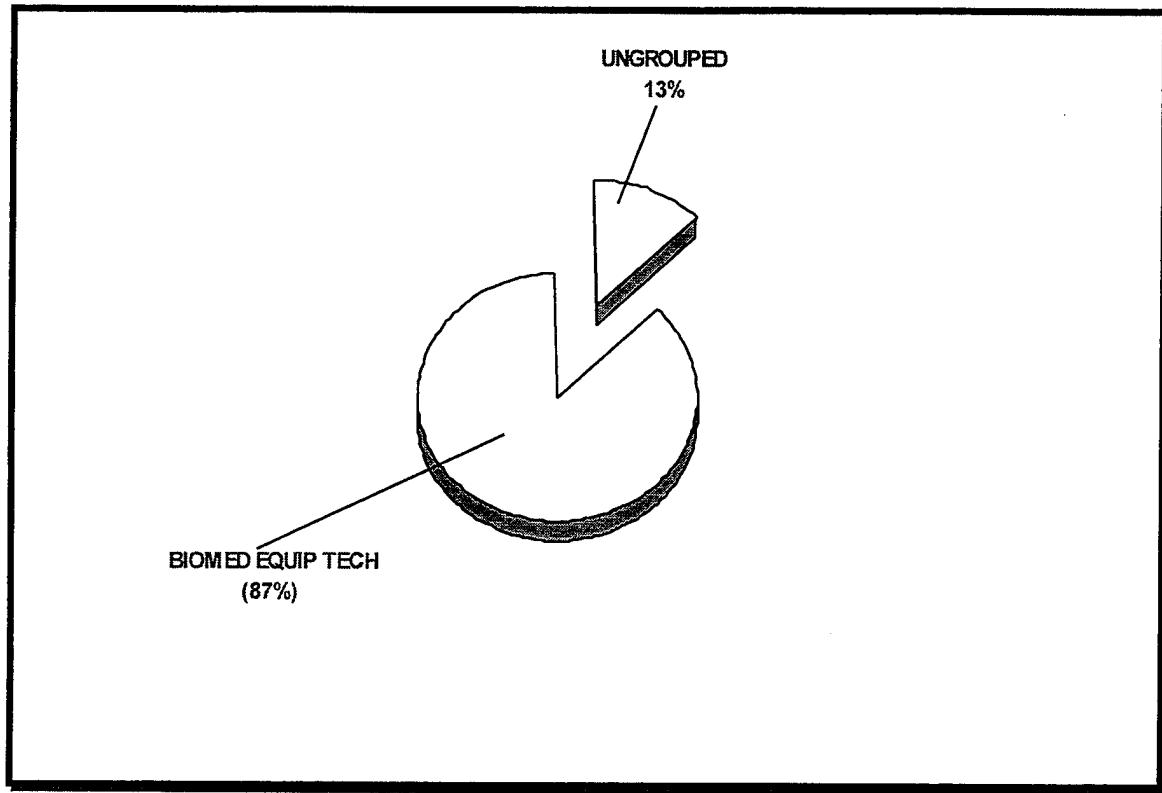


FIGURE 2

TABLE 15

RELATIVE PERCENT TIME SPENT ON DUTIES
BY FIRST-ENLISTMENT PERSONNEL
(N=67)

| DUTIES | | PERCENT TIME SPENT |
|--------|---|--------------------------|
| A | Supervision | 3 |
| B | Training | 1 |
| C | Performing General Administrative and Supply Activities | 10 |
| D | Performing General Maintenance Activities | 6 |
| E | Maintaining Diagnostic Equipment | 30 |
| F | Maintaining Diagnostic Support Equipment | 13 |
| G | Maintaining Therapeutic Equipment | 18 |
| H | Maintaining Therapeutic Support Equipment | 16 |
| I | Performing Medical Readiness Activities | 1 |
| J | Performing Facilities Management Activities | 2 |

TABLE 16
 REPRESENTATIVE TASKS PERFORMED BY AFSC 4A2X1
 FIRST-ENLISTMENT PERSONNEL
 (N=67)

| TASKS | PERCENT MEMBERS PERFORMING |
|-------|--|
| D174 | Perform electrical safety tests on medical equipment 91 |
| E257 | Perform preventive maintenance on pulse oximeters 90 |
| D187 | Solder electrical connections 88 |
| E255 | Calibrate or verify calibration of pulse oximeters 87 |
| E274 | Perform preventive maintenance on automatic blood pressure cuffs 85 |
| G848 | Calibrate or verify calibration of defibrillators 85 |
| G850 | Perform preventive maintenance on defibrillators 85 |
| E278 | Perform preventive maintenance on blood pressure monitors 84 |
| E276 | Calibrate or verify calibration of blood pressure monitors 84 |
| E405 | Perform preventive maintenance on vital sign monitors 84 |
| G836 | Perform preventive maintenance on infusion pumps 84 |
| C127 | Locate stock numbers or components in manufacturer's parts manuals or supply publications 82 |
| D178 | Perform initial inspections of new medical equipment 82 |
| E222 | Calibrate or verify calibration of electrocardiogram 82 |
| E403 | Calibrate or verify calibration of vital sign monitors 82 |
| E273 | Isolate malfunctions within automatic blood pressure cuffs 82 |
| E272 | Calibrate or verify calibration of automatic blood pressure cuffs 82 |
| E225 | Perform preventive maintenance on ECG monitors 82 |
| G834 | Calibrate or verify calibration of infusion pumps 81 |
| C119 | Complete equipment condition tags 80 |
| C137 | Order parts or components 79 |
| G820 | Perform preventive maintenance on electric hospital beds 79 |
| C145 | Review Air Force Medical Logistics Letters (AFMLLs) 78 |
| C118 | Complete AF Forms 1763 (Medical Maintenance Work Order) 67 |
| C124 | Input maintenance data 61 |
| A12 | Determine work priorities 55 |
| C135 | Make entries in work order logs 49 |

TABLE 17

MEDICAL TESTING EQUIPMENT USED BY
30 PERCENT OR MORE FIRST-ENLISTMENT AFSC 4A2X1 PERSONNEL
(PERCENT RESPONDING)

| <u>EQUIPMENT</u> | <u>1ST JOB (N=27)</u> | <u>1ST ENL (N=67)</u> |
|-------------------------------------|---------------------------|---------------------------|
| Multimeter | 93 | 96 |
| Safety Analyzer | 96 | 96 |
| Oscilloscope | 89 | 94 |
| Defibrillator Analyzer | 85 | 91 |
| Stop Watch | 85 | 91 |
| Tachometer | 74 | 87 |
| Electrosurgical Analyzer | 67 | 84 |
| Pressure Gauge | 78 | 84 |
| Decade Resistor Box | 59 | 81 |
| Power Supply | 59 | 78 |
| Infusion Pump Analyzer | 59 | 76 |
| Blood Pressure Calibrator | 63 | 75 |
| Weights | 67 | 75 |
| Physiological Simulator | 52 | 73 |
| Temperature Monitor | 59 | 73 |
| Electrocardiogram (ECG) Analyzer | 63 | 72 |
| Gas Flow and Pressure Meter | 56 | 69 |
| Battery Analyzer | 56 | 66 |
| Ultrasonic Wattmeter | 30 | 63 |
| Ground Fault Circuit Checker | 41 | 60 |
| Lag Thermometer | 33 | 60 |
| Vacuum Gauge | 48 | 57 |
| X-Ray Pulse Counter | 26 | 50 |
| X-Ray Phantom | 33 | 49 |
| Audiometer Calibrator | 48 | 48 |
| Mass Meter | 30 | 45 |
| Function Generator | 37 | 43 |
| Conductivity Tester | 30 | 42 |
| High Voltage Probe | 26 | 42 |
| Photometer | 30 | 40 |
| Signal Generator | 41 | 40 |
| Dynalyzer System | 26 | 39 |
| High Voltage Bleeder | 7 | 37 |
| Ultrasound Phantom | 33 | 36 |
| Ramp Generator | 33 | 34 |
| Laser Wattmeter | 11 | 33 |
| Non-invasive Kilivolt Peak Analyzer | 15 | 33 |
| Logic Clip and Probe | 15 | 31 |
| Logic Troubleshooting Kit | 15 | 31 |
| Gas Concentration Analyzer | 11 | 30 |
| Strain Gauge | 22 | 30 |

TABLE 18

MEDICAL EQUIPMENT MAINTAINED BY
30 PERCENT OR MORE FIRST-ENLISTMENT AFSC 4A2X1 PERSONNEL
(PERCENT RESPONDING)

| <u>EQUIPMENT</u> | <u>1ST JOB</u> <u>(N=27)</u> | <u>1ST ENL</u> <u>(N=67)</u> |
|---|---------------------------------|---------------------------------|
| Blood Pressure Monitor, Automatic | 96 | 93 |
| Defibrillator | 89 | 93 |
| Electrocardiograph (ECG) | 78 | 90 |
| Blood Pressure Cuff | 89 | 88 |
| Infusion Pump | 85 | 88 |
| Pulse Oximeter | 78 | 88 |
| Examination Lamp | 85 | 84 |
| Sterilizer, Steam | 74 | 84 |
| Centrifuge, other than Refrigerated/Microhematocrit | 74 | 82 |
| Examination Table | 81 | 82 |
| Hospital Bed | 78 | 82 |
| Dental Operating Chair | 74 | 81 |
| Dental Operating Lamp | 70 | 81 |
| Electric Bed | 74 | 81 |
| Vital Sign Monitor | 74 | 81 |
| Automatic Dental X-Ray Film Processor | 63 | 78 |
| Dental Curing Unit | 67 | 78 |
| Electrosurgical System | 63 | 78 |
| Hypo/Hyperthermia Unit | 59 | 78 |
| Amalgamator | 63 | 76 |
| Otoscope | 63 | 76 |
| Cast Cutter | 56 | 75 |
| Dental Handpiece | 70 | 75 |
| Oxygen Analyzer | 59 | 75 |
| Temperature Monitor | 59 | 75 |
| X-Ray Film Processor | 56 | 75 |
| Dental X-Ray System, other than Panoramic | 59 | 73 |
| Infant Warmer | 59 | 73 |
| Slit Lamp | 56 | 73 |
| Surgical Lamp | 56 | 73 |
| Audiometer | 78 | 72 |
| Blood Warmer | 48 | 72 |
| Dental Operating Unit | 56 | 72 |
| Dental Ultrasonic Cleaner | 56 | 72 |
| Infant Incubator | 52 | 72 |
| Pneumatic Tourniquet | 52 | 72 |
| Dental Fiber Optic System | 63 | 70 |
| Dental Ultrasonic Prophylaxis Unit | 63 | 70 |
| Electronic Thermometer | 59 | 70 |
| Exercise Bicycle | 67 | 70 |
| Pediatric Scales | 48 | 70 |
| Sterilizer, Washer | 52 | 70 |
| Laboratory Microscope | 52 | 69 |

TABLE 18 (CONTINUED)

MEDICAL EQUIPMENT MAINTAINED BY
30 PERCENT OR MORE FIRST-ENLISTMENT AFSC 4A2X1 PERSONNEL
(PERCENT RESPONDING)

| <u>EQUIPMENT</u> | <u>1ST JOB (N=27)</u> | <u>1ST ENL (N=67)</u> |
|--|---------------------------|---------------------------|
| Scales or Balances, other than Pediatric | 52 | 69 |
| Treadmill | 44 | 69 |
| Infant Care Center | 52 | 67 |
| Surgical Table, other than Field | 48 | 67 |
| Incubator | 37 | 66 |
| Ophthalmoscope | 44 | 66 |
| Intermittent Suction Unit | 63 | 64 |
| Sphygmomanometer | 48 | 64 |
| Suction/Pressure System | 59 | 64 |
| Wheelchair, other than Electric | 52 | 64 |
| Mobile Radiographic X-Ray System | 41 | 63 |
| Warming Cabinet | 37 | 63 |
| Audiometer Booth | 70 | 61 |
| Cryosurgical Unit | 37 | 61 |
| Eye Chart Projector | 37 | 61 |
| Fetal Heart Monitor | 41 | 61 |
| Panoramic X-Ray System | 52 | 61 |
| X-Ray Generator | 37 | 61 |
| X-Ray Table | 33 | 61 |
| Cardiopulmonary Resuscitation Training Mannequin | 44 | 60 |
| Laboratory or Pharmacy Refrigerator | 56 | 60 |
| Manual Bed | 63 | 60 |
| Apnea Monitor | 33 | 58 |
| Collimator/Beam Limiting Device | 44 | 58 |
| Heat Sealer | 37 | 58 |
| Transportable Incubator | 33 | 58 |
| Vacuum/Suction Pump | 48 | 58 |
| Refrigerated Blood Bank | 44 | 57 |
| Tympanometer | 33 | 57 |
| Cell Washer | 37 | 55 |
| Dental Shell or Sandblasting Unit | 33 | 55 |
| Stationary Dental X-Ray System, other than Panoramic | 33 | 55 |
| Ventilator, other than Pediatric | 41 | 55 |
| Automatic Pill Counter | 44 | 54 |
| Dental Furnace | 33 | 54 |
| Ultrasonic Fetal Doppler | 33 | 54 |
| Blood Pressure Monitor, other than Automatic | 52 | 52 |
| Dental Mixer Investor | 37 | 52 |
| Bone Saw | 33 | 51 |
| Dental Suction Machine | 44 | 51 |
| Fiber Optic System, other than Dental | 33 | 51 |
| Flowmeter | 37 | 51 |
| Heart Rate Monitor | 33 | 51 |

TABLE 18 (CONTINUED)

MEDICAL EQUIPMENT MAINTAINED BY
30 PERCENT OR MORE FIRST-ENLISTMENT AFSC 4A2X1 PERSONNEL
(PERCENT RESPONDING)

| <u>EQUIPMENT</u> | <u>1ST JOB (N=27)</u> | <u>1ST ENL (N=67)</u> |
|--------------------------------------|---------------------------|---------------------------|
| Oxygen Regulator | 22 | 51 |
| Phoropter | 30 | 51 |
| Traction Equipment | 26 | 51 |
| Ear, Nose, and Throat (ENT) Chair | 33 | 49 |
| Keratometer | 26 | 49 |
| Neonatal Monitor | 22 | 49 |
| Optical Microscope | 30 | 49 |
| Silver Recovery Unit | 30 | 49 |
| Spot Film Device | 26 | 49 |
| Tilt Table | 19 | 49 |
| Treatment Table | 19 | 49 |
| Ultrasonic Stethoscope | 22 | 49 |
| Diagnostic Ultrasound Imaging System | 33 | 48 |
| Ultrasonic Therapy System | 30 | 48 |
| Automixer | 22 | 46 |
| Bacteriological Incubator | 22 | 46 |
| Coagulator | 44 | 46 |
| Colposcope | 30 | 46 |
| Dental Surgical Air Drill | 37 | 46 |
| Lens Measuring Instrument | 19 | 46 |
| Lensometer | 22 | 46 |
| Tonometer | 30 | 46 |
| Blood Gas Analyzer | 33 | 45 |
| Cell Counter | 26 | 45 |
| Dental Lathe | 22 | 45 |
| Dental Oral Evacuator | 37 | 45 |
| Dental Water Bath | 30 | 45 |
| Insufflator | 26 | 45 |
| Mammography System | 26 | 45 |
| Obstetric Delivery Lamp | 15 | 45 |
| Obstetric Delivery Table | 15 | 45 |
| Pediatric Ventilator | 19 | 45 |
| Spirometer | 26 | 45 |
| Sterilizer, Chemical | 26 | 45 |
| Dental Casting Machine | 22 | 43 |
| Dental Pulp Tester | 26 | 43 |
| Oxygen Blender | 22 | 43 |
| Respiration Monitor | 22 | 43 |
| Sigmoidscope | 22 | 43 |
| Bone Drill | 19 | 42 |
| Microhematocrit Centrifuge | 26 | 42 |
| Refrigerated Centrifuge | 41 | 42 |

TABLE 18 (CONTINUED)

MEDICAL EQUIPMENT MAINTAINED BY
30 PERCENT OR MORE FIRST-ENLISTMENT AFSC 4A2X1 PERSONNEL
(PERCENT RESPONDING)

| <u>EQUIPMENT</u> | <u>1ST JOB (N=27)</u> | <u>1ST ENL (N=67)</u> |
|---|---------------------------|---------------------------|
| Three-Phase X-Ray System | 19 | 42 |
| X-Ray Tube Suspension System | 22 | 42 |
| Dental Air Compressor | 33 | 40 |
| Mixing Vibrator | 15 | 40 |
| Surgical Microscope | 19 | 40 |
| Telemetry System | 19 | 40 |
| Ultrasonic Cleaning System, other than Dental | 15 | 40 |
| Contrast Densitometer | 15 | 39 |
| Paraffin Bath | 19 | 39 |
| Slide Stainer | 15 | 39 |
| X-Ray Illuminator, other than Motorized | 7 | 39 |
| Exercise Table | 19 | 37 |
| Anesthesia System | 22 | 36 |
| Arrhythmia Monitor | 15 | 36 |
| Dental Central Vacuum System | 22 | 36 |
| Dental Engine | 15 | 36 |
| Depth Perception Test Equipment | 26 | 36 |
| Image Intensification System | 26 | 36 |
| Spectrophotometer | 26 | 36 |
| Vision Measurement Instrument | 22 | 36 |
| Dental Model Trimmer | 26 | 34 |
| Laryngoscope | 19 | 34 |
| Pacemaker | 19 | 34 |
| Video Cart | 15 | 34 |
| X-Ray TV System | 7 | 34 |
| Addressograph | 30 | 33 |
| Dermatome | 22 | 33 |
| Diathermy Unit | 22 | 33 |
| Food Cart | 15 | 33 |
| Hydrotherapy System | 15 | 33 |
| Mobile Fluoroscopic X-Ray System | 15 | 33 |
| Oxygen Tent Assembly | 11 | 33 |
| Scope Washer | 15 | 33 |
| X-Ray Film Duplicator | 19 | 33 |
| Bilirubin Lamp | 11 | 31 |
| Dental Electrocautery Unit | 22 | 31 |
| Distilling Apparatus | 15 | 30 |
| Fluorimaging System | 15 | 30 |
| Overbed or Bedside Table | 15 | 30 |
| Vacuum Cleaner | 26 | 30 |
| Vaporizer | 22 | 30 |
| X-Ray Film Identifier | 7 | 30 |

Training Emphasis (TE) and Task Difficulty (TD) Data

TE and TD data are secondary factors that can assist technical school personnel in deciding which tasks should be emphasized in entry-level training. These ratings, based on the judgments of senior career ladder NCOs working at operational units in the field, are collected to provide training personnel with a rank-ordering of those tasks in the JI considered important for first-enlistment personnel training (see Table 19 for the top-rated tasks), along with a measure of the difficulty of the JI tasks (see selected high rated tasks presented in Table 20). When combined with data on the percentages of first-enlistment personnel performing tasks, comparisons can then be made to determine if training adjustments are necessary. For example, tasks receiving high ratings on both task factors, accompanied by moderate to high percentages performing, may warrant resident training. Those tasks receiving high task factor ratings, but low percentages performing, may be more appropriately planned for OJT programs within the career ladder. Low task factor ratings may highlight tasks best omitted from training for first-enlistment personnel, but this decision must be weighed against percentages of personnel performing the tasks, command concerns, and criticality of the tasks.

To assist technical school personnel, AFOMS has developed a computer program that incorporates these secondary factors and the percentage of first-enlistment personnel performing each task to produce an Automated Training Indicator (ATI) for each task. These indicators correspond to training decisions listed and defined in the Training Decision Logic Table found in Attachment 1, AETCR 52-22, and allows course personnel to quickly focus their attention on those tasks which are most likely to qualify for initial resident course consideration.

Table 19 presents technical tasks with the highest TE ratings for AFSC 4A2X1 first-enlistment airmen, while Table 20 displays those tasks AFSC 4A2X1 raters judged to be most difficult to learn. For example, TE raters (refer to Table 19) reported tasks involving defibrillators such as calibration, preventive maintenance, and isolation of malfunctions, require considerable training emphasis. As the data show, many airmen in their first job and within their first enlistment are performing these tasks. Table 20 shows TD raters reported installation of fixed radiographic x-ray machines, installation of fluorimaging systems, and related maintenance tasks dealing with radiological equipment to be difficult tasks to learn.

Various lists of tasks, accompanied by TE and TD ratings, and where appropriate, ATI information, are contained in the TRAINING EXTRACT package and should be reviewed in detail by technical school personnel. (For a more detailed explanation of TE and TD ratings, see Task Factor Administration in the **SURVEY METHODOLOGY** section of this report.)

TABLE 19

TASKS RATED HIGHEST IN TRAINING EMPHASIS

| TASKS | TNG EMP* | PERCENT MEMBERS PERFORMING | | TASK DIFF* |
|-------|-------------|----------------------------------|-------------------|---------------|
| | | 1ST JOB (N=27) | 1ST ENL (N=67) | |
| G848 | 6.90 | 78 | 85 | 5.64 |
| G850 | 6.59 | 78 | 85 | 4.97 |
| H1082 | 6.14 | 56 | 69 | 5.15 |
| D174 | 6.10 | 96 | 91 | 3.73 |
| G849 | 6.04 | 59 | 73 | 6.13 |
| G808 | 5.96 | 56 | 75 | 5.61 |
| E448 | 5.96 | 30 | 48 | 5.95 |
| G810 | 5.94 | 59 | 76 | 5.07 |
| E454 | 5.86 | 48 | 58 | 5.38 |
| D187 | 5.84 | 89 | 88 | 4.00 |
| E430 | 5.82 | 30 | 49 | 6.18 |
| G834 | 5.80 | 81 | 81 | 5.07 |
| E255 | 5.76 | 81 | 87 | 4.73 |
| E222 | 5.76 | 70 | 82 | 5.54 |
| E272 | 5.75 | 74 | 82 | 4.66 |
| H1081 | 5.73 | 52 | 58 | 5.84 |
| E225 | 5.73 | 74 | 82 | 5.05 |
| H1079 | 5.71 | 44 | 57 | 5.30 |
| G759 | 5.71 | 59 | 67 | 4.23 |
| G851 | 5.69 | 56 | 72 | 5.94 |
| D178 | 5.69 | 74 | 82 | 4.89 |

* Mean TE Rating is 2.28, and Standard Deviation is 1.40 (High TE = 3.68)

** Average TD Rating is 5.00

TABLE 20

TASKS RATED HIGHEST IN TASK DIFFICULTY

| TASKS | TASK DIFF | PERCENT MEMBERS PERFORMING | | | | | TNG EMP |
|--------------------------------|--------------|----------------------------|-------------------|---------------------------|---------------------------|------|------------|
| | | 1ST JOB (N=27) | 1ST ENL (N=67) | DAFSC 4A251 (N=222) | DAFSC 4A271 (N=117) | | |
| E428 | 7.82 | 11 | 16 | 27 | 15 | 2.67 | |
| C120 | 7.71 | 4 | 4 | 19 | 23 | 1.37 | |
| E433 | 7.70 | 4 | 12 | 18 | 14 | 2.43 | |
| E467 | 7.45 | 11 | 24 | 45 | 35 | 4.08 | |
| E419 | 7.45 | 0 | 6 | 5 | 3 | 1.51 | |
| E434 | 7.42 | 7 | 27 | 44 | 36 | 5.08 | |
| G861 | 7.41 | 0 | 1 | 3 | 0 | 1.37 | |
| G853 | 7.38 | 0 | 3 | 1 | 0 | 1.24 | |
| G855 | 7.38 | 0 | 3 | 1 | 0 | .84 | |
| E408 | 7.35 | 4 | 9 | 12 | 8 | 1.31 | |
| E429 | 7.35 | 15 | 39 | 59 | 46 | 5.25 | |
| G852 | 7.34 | 0 | 4 | 3 | 1 | 1.18 | |
| F512 | 7.34 | 0 | 7 | 16 | 6 | 2.63 | |
| D172 | 7.31 | 4 | 12 | 23 | 22 | 1.98 | |
| Administration (FDA) standards | | | | | | | |
| F725 | 7.31 | 7 | 10 | 17 | 11 | 1.80 | |
| G860 | 7.28 | 0 | 3 | 4 | 0 | 1.37 | |
| E469 | 7.27 | 11 | 25 | 45 | 32 | 3.94 | |
| F722 | 7.24 | 11 | 30 | 48 | 38 | 5.10 | |
| E384 | 7.23 | 19 | 27 | 32 | 25 | 3.69 | |
| E388 | 7.23 | 7 | 16 | 22 | 17 | 3.29 | |
| G863 | 7.23 | 0 | 1 | 3 | 0 | 1.24 | |
| E432 | 7.22 | 11 | 30 | 39 | 30 | 4.71 | |

* Average TD Rating is 5.00

TABLE 21

EXAMPLES OF STS ELEMENTS NOT SUPPORTED BY SURVEY DATA

| STS REFERENCE/TASKS | 3-LVL COURSE PROF CODE | PERCENT MEMBERS PERFORMING | | | | | | | | TNG EMP* | TSK DIFF** |
|---------------------|--|----------------------------|---------------|-----------------|------------------|------------------|-------|-------|-------|-------------|---------------|
| | | 1ST | 1ST | DAFSC | DAFSC | DAFSC | DAFSC | DAFSC | DAFSC | | |
| | | JOB (N=27) | ENL (N=67) | 4A231 (N=81) | 4A251 (N=222) | 4A271 (N=177) | | | | | |
| 17j(5) | - | | | | | | | | | | |
| | Isolate malfunctions | | | | | | | | | | |
| G769 | Isolate malfunctions within diathermy units | 7 | 16 | 16 | 18 | 13 | | | 2.37 | 5.55 | |
| 17k(3) | - | | | | | | | | | | |
| | Perform preventive maintenance inspection | | | | | | | | | | |
| G832 | Perform preventive maintenance on hypodermic jet injectors | 4 | 12 | 10 | 13 | 2 | | | 1.55 | 4.28 | |
| 17k(4) | - | | | | | | | | | | |
| | Isolate malfunctions | | | | | | | | | | |
| G831 | Isolate malfunctions within hypodermic jet injectors | 4 | 7 | 7 | 12 | 3 | | | 1.33 | 5.01 | |
| 17u(5) | 2b | | | | | | | | | | |
| | Isolate malfunctions | | | | | | | | | | |
| G909 | Isolate malfunctions within multi-gas analyzers | 4 | 13 | 10 | 11 | 11 | | | 2.10 | 6.70 | |
| 17v(4) | - | | | | | | | | | | |
| | Isolate malfunctions | | | | | | | | | | |
| H1123 | Isolate malfunctions within surgical laser systems | 4 | 12 | 7 | 14 | 10 | | | 3.08 | 7.10 | |
| 18c(3) | - | | | | | | | | | | |
| | Perform preventive maintenance inspection | | | | | | | | | | |
| H1138 | Perform preventive maintenance on water purification systems | 11 | 15 | 14 | 16 | 6 | | | 2.10 | 3.82 | |
| 19a(2)(b)5d | - | | | | | | | | | | |
| | Recording devices other than spot film | | | | | | | | | | |
| E419 | Isolate malfunctions within CINE systems | 0 | 6 | 5 | 5 | 3 | | | 1.51 | 7.45 | |
| 19a(2)(d)3 | - | | | | | | | | | | |
| | Perform preventive maintenance inspection | | | | | | | | | | |
| F694 | Calibrate or verify calibration of film changing systems | 4 | 4 | 4 | 4 | 4 | | | 1.06 | 5.84 | |

* Mean TE Rating is 2.28, and Standard Deviation is 1.40 (High TE = 3.68)

** Average TD Rating is 5.00

TABLE 21 (CONTINUED)
EXAMPLES OF STS ELEMENTS NOT SUPPORTED BY SURVEY DATA

| STS REFERENCE/TASKS | 3-LVL COURSE | PERCENT MEMBERS PERFORMING | | | | | | | | | |
|---------------------|--|----------------------------|---------------|-----------------|------------------|------------------|-------|--------|-------|-----|-----|
| | | 1ST | 1ST | DAFSC | DAFSC | DAFSC | DAFSC | DAFSC | DAFSC | TNG | TSK |
| | | JOB (N=27) | ENL (N=67) | 4A231 (N=81) | 4A251 (N=222) | 4A271 (N=177) | EMP* | DIFF** | | | |
| 19a(2)(e)4 | Perform system calibration | - | | | | | | | | | |
| E190 | Calibrate or verify calibration of angio injectors | 0 | 7 | 5 | 9 | 6 | 1.16 | 6.41 | | | |
| 19a(2)(e)5 | Isolate malfunctions within angio injectors | - | | | | | | | | | |
| E191 | Isolate malfunctions within angio injectors | 0 | 6 | 4 | 6 | 5 | 1.02 | 6.69 | | | |
| 19c(1)(c) | Perform preventive maintenance inspection | 2b | | | | | | | | | |
| E229 | Perform preventive maintenance on echocardiographs | 11 | 16 | 14 | 18 | 13 | 3.37 | 5.07 | | | |
| 19c(1)(e) | Isolate malfunctions | 2b | | | | | | | | | |
| E228 | Isolate malfunctions within echocardiographs | 11 | 13 | 11 | 14 | 9 | 2.94 | 5.94 | | | |
| 19d(3)(c) | Isolate malfunctions | - | | | | | | | | | |
| E215 | Isolate malfunctions within cardiac output computers | 4 | 12 | 12 | 12 | 6 | 2.14 | 6.25 | | | |
| 20c(4) | Isolate malfunctions within tissue processors | - | | | | | | | | | |
| 20d(4) | Isolate malfunctions | 0 | 13 | 16 | 18 | 9 | 1.67 | 5.73 | | | |
| F651 | Isolate malfunctions within optical magnifying equipment | 4 | 15 | 11 | 14 | 9 | 1.75 | 4.44 | | | |
| 20f(3) | Perform preventive maintenance | 2b | | | | | | | | | |
| F566 | Perform preventive maintenance on electronic particle counters | 4 | 7 | 6 | 9 | 6 | 2.61 | 5.37 | | | |

* Mean TE Rating is 2.28, and Standard Deviation is 1.40 (High TE = 3.68)

** Average TD Rating is 5.00

TABLE 21 (CONTINUED)

EXAMPLES OF STS ELEMENTS NOT SUPPORTED BY SURVEY DATA

| STS REFERENCE/TASKS | 3-LVL COURSE | PERCENT MEMBERS PERFORMING | | | | | | | TSK DIFF** | |
|---------------------|---|----------------------------|--------|--------|---------|---------|-------------|------|---------------|--|
| | | 1ST | 1ST | DAFSC | DAFSC | DAFSC | TNG EMP* | | | |
| | | JOB | ENL | 4A231 | 4A251 | 4A271 | | | | |
| | | (N=27) | (N=67) | (N=81) | (N=222) | (N=177) | | | | |
| 20f(4) | Isolate malfunctions | 2b | | | | | | | | |
| 20g(5) | F565 Isolate malfunctions within electronic particle counters | 0 | 6 | 4 | 7 | 4 | 2.10 | 6.36 | | |
| | Isolate malfunctions | - | | | | | | | | |
| 20n(3) | F624 Isolate malfunctions within spectrophotometers | 4 | 13 | 14 | 18 | 7 | 2.45 | 5.81 | | |
| | Perform preventive maintenance inspection | - | | | | | | | | |
| 20o(3) | E212 Perform preventive maintenance on arterial balloon pumps | 0 | 1 | 1 | 2 | 2 | 1.39 | 5.82 | | |
| | Perform preventive maintenance inspection | - | | | | | | | | |
| | G854 Perform preventive maintenance on heart-lung machines | 0 | 6 | 5 | 2 | 0 | 1.29 | 6.33 | | |

* Mean TE Rating is 2.28, and Standard Deviation is 1.40 (High TE = 3.68)

** Average TD Rating is 5.00

TABLE 22

EXAMPLES OF TECHNICAL TASKS PERFORMED BY 20 PERCENT OR MORE
GROUP MEMBERS AND NOT REFERENCED TO THE STS

| TASKS | PERCENT MEMBERS PERFORMING | | | | | | | TNG EMP* | TSK DIFF** |
|-------|----------------------------|----------------------|--------------------------|---------------------------|---------------------------|--|------|-------------|---------------|
| | 1ST JOB (N=27) | 1ST ASG (N=67) | DAFSC 4A231 (N=81) | DAFSC 4A251 (N=222) | DAFSC 4A271 (N=117) | | | | |
| | | | | | | | | | |
| G851 | 56 | 72 | 77 | 74 | 44 | | 5.69 | 5.94 | |
| G868 | 33 | 58 | 64 | 57 | 33 | | 5.61 | 5.13 | |
| E405 | 78 | 84 | 85 | 77 | 42 | | 5.53 | 4.86 | |
| G870 | 41 | 63 | 67 | 60 | 33 | | 5.53 | 4.58 | |
| H1083 | 48 | 57 | 64 | 73 | 44 | | 5.35 | 5.72 | |
| E347 | 70 | 79 | 83 | 79 | 47 | | 5.31 | 3.79 | |
| G811 | 37 | 55 | 64 | 66 | 38 | | 5.31 | 5.78 | |
| E403 | 74 | 82 | 83 | 77 | 40 | | 5.25 | 5.35 | |
| E425 | 26 | 48 | 52 | 63 | 46 | | 5.25 | 5.52 | |
| E243 | 59 | 63 | 68 | 62 | 35 | | 5.18 | 5.04 | |
| E455 | 41 | 42 | 52 | 65 | 43 | | 5.08 | 5.97 | |
| G760 | 56 | 63 | 67 | 68 | 39 | | 5.06 | 4.74 | |
| E349 | 70 | 79 | 84 | 80 | 47 | | 5.02 | 3.60 | |
| G869 | 30 | 49 | 53 | 50 | 33 | | 5.02 | 5.27 | |
| E245 | 67 | 67 | 70 | 62 | 34 | | 5.00 | 4.64 | |

Specialty Training Standard (STS)

A comprehensive review of STS 4A2X1, dated February 1994, was made by comparing survey data to STS elements. Technical school personnel from the 384th Training Squadron at Sheppard AFB TX matched JI tasks to appropriate STS sections and subsections. A complete computer listing displaying the percent members performing tasks, TE and TD ratings for each task, along with the STS matchings, has been forwarded to the technical school for their review of the training documents. A complete computer listing for equipment items and forms has also been forwarded to the school.

Typically, STS sections and subsections matched to tasks which have sufficiently high TE and TD ratings, and are performed by at least 20 percent of personnel in appropriate experience or skill-level groups (such as first-enlistment (1-48 months TAFMS) and 5- and 7-skill level groups), are considered to be supported and should be considered for inclusion in the STS. Likewise, paragraphs having tasks with less than 20 percent performing across all of the criterion groups should be considered for deletion from the STS.

STS paragraphs such as Electronic Principles, Medical Readiness, Career Ladder Progression, USAF Graduate Evaluation Program, AF Occupational Safety and Health Program, Professional and Patient Relationship, Publications, Medical Materiel Procedures, Maintenance Administration, Medical Equipment Control, Maintenance Management Functions, Facility/Equipment Interface, and Biomedical Principles (paragraphs 1-15) were not reviewed. Paragraphs 16-21 were thoroughly reviewed against the OSR data. Most were, in general, supported, in that tasks matched to the STS paragraphs generally had at least 20 percent of one criterion group performing the matched tasks. However, several paragraphs need to be carefully reviewed by SMEs for possible fine-tuning of content and proficiency codes.

Table 21 lists several examples of STS paragraphs which need to be reviewed by SMEs, either because they do not meet the 20 percent performing criteria, or the 3-skill level course proficiency code is not supported by the data. For example, paragraphs 17j(5), 17k(3), 17k(4), 17v(4), and 18c(3) need to be considered for deletion in future revisions due to small percentages (less than 20 percent) performing related tasks. Proficiency codes for paragraphs 17u(5), 19c(1)c, and 19c(1)e should be carefully reviewed. In paragraph 17u(5), only 13 percent of first-enlistment personnel perform related tasks, but the course teaches the item to the "2b" level. In paragraph 17s(3), 79 percent of first-enlistment personnel perform related tasks, yet the item is not taught at all in the course. Paragraph 13s(4) is similar, in that 58 percent of first-enlistment personnel perform related items, yet the item is not taught in the 3-skill level course. Perhaps a knowledge level for these items would be appropriate rather than the dash currently shown.

Tasks not matched to any element of the STS are listed at the end of the STS computer listing. Table 22 lists examples of tasks which were performed by 20 percent or more of criterion groups, but not matched to any STS item. Training personnel and SMEs should review these and other unreferenced tasks to determine their appropriateness in being included in the STS. These unreferenced tasks cover a wide variety of areas across the career ladder.

Plan of Instruction (POI)

An analysis of the POI for course J3ABR4A231 was not conducted for this report due to the recent revisions being worked at the technical training school.

JOB SATISFACTION ANALYSIS

An examination of the job satisfaction indicators of various groups can give career ladder managers a better understanding of some of the factors which may affect the job performance of airmen in the career ladder. Attitude questions covering job interest, perceived utilization of talents and training, sense of accomplishment from work, and reenlistment intentions were included in the survey booklet to provide indications of job satisfaction.

Table 23 presents job satisfaction data for AFSC 4A2X1 TAFMS groups, together with TAFMS data for a comparative sample of medical career ladders surveyed in 1994. The majority of the survey sample were extremely satisfied, with high percentages finding their jobs interesting, utilizing their talents and training, and gaining a high sense of accomplishment from their work. The intentions to reenlist for the AFSC 4A2X1 career ladder were a bit lower than other medical career ladders.

An indication of how job satisfaction perceptions have changed over time is provided in Table 24, where again TAFMS data for 1995 survey respondents are presented, along with data from respondents in the last OSR involving this career ladder in 1989 (AFSC 918X0). Comparison of job satisfaction indicator responses of the current survey TAFMS groups to those in the 1989 survey indicates no major change and are comparable to the 1989 corresponding groups.

In Table 25, a comparison of job satisfaction indicators for the specialty job groups shows BMETs, Supervisors, and Instructors responding positively to all the indicators listed. The only job group showing low satisfaction is Facility Managers. They consistently report the lowest indicators in job interest, utilization of talent, utilization of training, and sense of accomplishment, considerably lower than the other jobs in the career field.

Write-In Comments

When there are serious problems in a career ladder, survey respondents are usually quite free with write-in comments to address perceived problems in the field. Nearly all of the write-in comments pertained to the job of facility manager. These comments generally followed the same theme of "If you don't use it, you lose it," in regards to technical school training which many regarded as "excellent" and "more than adequate." The particular issues of facilities'

management addressed included a lack of formal training for facility managers, loss of BMET skills due to lack of utilization, and insufficient rank to carry out duties effectively. The following are actual comments made by AFSC 4A2X1 personnel:

“It would be extremely beneficial to all concerned if formal facility manager training was automatically scheduled whenever 4A2X1 personnel are assigned as facility managers.”

“Being a facility manager has been an OJT situation which has only minimally utilized my BMET training. I do not think that WAPS testing is entirely fair to a person doing facilities management. My skills at troubleshooting an electrical circuit are rusty at best.”

“As a cross trainee, it was very frustrating spending approximately 10 months at the technical school and arrive at my next duty station, and being told I was the facility manager -- a job I had no training for nor the desire to do. A great deal was spent on training me to repair medical equipment and I have been assigned to an area where those skills are not utilized. Think of the costly mistakes that could and would be made when an unqualified individual is made to do this job. My BMET training never taught me how to supervise construction projects, and in the interim, I lose my BMET skills. I may then get a PCS assignment to be NCOIC of a BMET shop--and me with no skills. I feel that if the preference is to use military versus civilians in this position, then it should be a separate career field, with knowledge of some aspects of civil engineering.”

TABLE 23

COMPARISON OF JOB SATISFACTION INDICATORS BY TAFMS GROUPS
(PERCENT MEMBERS RESPONDING)

| | 1-48 MOS TAFMS | | 49-96 MOS TAFMS | | 97+ MOS TAFMS | |
|--|-------------------------|-----------------------------|-------------------------|-----------------------------|--------------------------|-----------------------------|
| | 1995 4A2X1 (N=67) | COMP SAMPLE* (N=1384) | 1995 4A2X1 (N=94) | COMP SAMPLE* (N=1039) | 1995 4A2X1 (N=267) | COMP SAMPLE* (N=1953) |
| <u>EXPRESSED JOB INTEREST:</u> | | | | | | |
| INTERESTING | 94 | 72 | 86 | 72 | 87 | 72 |
| SO-SO | 3 | 16 | 6 | 16 | 9 | 18 |
| DULL | 3 | 12 | 7 | 12 | 4 | 10 |
| <u>PERCEIVED UTILIZATION OF TALENTS:</u> | | | | | | |
| FAIRLY WELL TO PERFECTLY | 94 | 79 | 90 | 81 | 88 | 84 |
| LITTLE OR NOT AT ALL | 6 | 21 | 10 | 19 | 12 | 16 |
| <u>PERCEIVED UTILIZATION OF TRAINING:</u> | | | | | | |
| FAIRLY WELL TO PERFECTLY | 93 | 91 | 91 | 88 | 78 | 86 |
| LITTLE OR NOT AT ALL | 7 | 9 | 9 | 12 | 22 | 14 |
| <u>SENSE OF ACCOMPLISHMENT GAINED FROM WORK:</u> | | | | | | |
| SATISFIED | 87 | 71 | 81 | 73 | 75 | 74 |
| NEUTRAL | 4 | 14 | 7 | 11 | 10 | 9 |
| DISSATISFIED | 9 | 15 | 12 | 16 | 15 | 17 |
| <u>REENLISTMENT INTENTIONS:</u> | | | | | | |
| YES, OR PROBABLY YES | 49 | 57 | 50 | 68 | 66 | 73 |
| NO, OR PROBABLY NO | 51 | 43 | 50 | 32 | 10 | 9 |
| PLAN TO RETIRE | 0 | 0 | 0 | 0 | 24 | 18 |

* Comparative sample of Medical career ladders surveyed in 1994 (includes 4C0X1, Mental Health Service, 4D0X1, Diet Therapy, 4E0X1, 4M0X1, Aerospace Physiology, 4N0X1, Medical Services, 4N1X1, Surgical Services, 4N1X1B, Surgical Services/Urology, 4N1X1C, Surgical Services/Orthopedics, 4N1X1D, Surgical Services/Otorhinolaryngology, 4U0X1, Orthotics, 4V0X1, Optometry, 4V0X1A, Ophthalmology, 4Y0X1, Dental Assistant, 4Y0X2, Dental Laboratory)

TABLE 24

COMPARISON OF CURRENT SURVEY AND 1989 TAFMS GROUPS
(PERCENT MEMBERS RESPONDING)

| | 1-48 MONTHS TAFMS | | 49-96 MONTHS TAFMS | | 97+ MONTHS TAFMS | |
|---|----------------------|--------------------------|-------------------------|-------------------------|--------------------------|--------------------------|
| | 1995 (N=67) | 1989 918X0 (N=182) | 1995 4A2X1 (N=94) | 1989 918X0 (N=68) | 1995 4A2X1 (N=267) | 1989 918X0 (N=190) |
| <u>EXPRESSED JOB INTEREST:</u> | | | | | | |
| INTERESTING | 94 | 88 | 86 | 82 | 87 | 89 |
| SO-SO | 3 | 9 | 6 | 9 | 9 | 6 |
| DULL | 3 | 2 | 7 | 9 | 4 | 5 |
| <u>PERCEIVED UTILIZATION OF TALENTS:</u> | | | | | | |
| FAIRLY WELL TO PERFECTLY | 94 | 97 | 90 | 88 | 88 | 91 |
| LITTLE OR NOT AT ALL | 6 | 3 | 10 | 12 | 12 | 9 |
| <u>PERCEIVED UTILIZATION OF TRAINING:</u> | | | | | | |
| FAIRLY WELL TO PERFECTLY | 93 | 93 | 91 | 91 | 78 | 87 |
| LITTLE OR NOT AT ALL | 7 | 5 | 9 | 9 | 22 | 13 |
| <u>REENLISTMENT INTENTIONS:</u> | | | | | | |
| YES, OR PROBABLY YES | 49 | 52 | 50 | 53 | 66 | 65 |
| NO, OR PROBABLY NO | 51 | 48 | 50 | 47 | 10 | 12 |
| WILL RETIRE | 0 | 0 | 0 | 0 | 24 | 23 |

TABLE 25

COMPARISONS OF JOB SATISFACTION INDICATORS BY SPECIALTY JOBS
(PERCENT MEMBERS RESPONDING)

| | BIOMEDICAL TECHNICIAN (ST0016) (N=321) | SUPERVISOR (ST0030) (N=38) | FACILITY MANAGER (ST0070) (N=31) | INSTRUCTOR (ST0028) (N=9) |
|--|---|----------------------------------|---|---------------------------------|
| <u>EXPRESSED JOB INTEREST:</u> | | | | |
| INTERESTING | 91 | 89 | 77 | 89 |
| SO-SO | 6 | 6 | 16 | 0 |
| DULL | 3 | 5 | 7 | 11 |
| <u>PERCEIVED UTILIZATION OF TALENTS:</u> | | | | |
| FAIRLY WELL TO PERFECTLY LITTLE OR NOT AT ALL | 94 6 | 95 5 | 71 29 | 100 0 |
| <u>PERCEIVED UTILIZATION OF TRAINING:</u> | | | | |
| FAIRLY WELL TO PERFECTLY LITTLE OR NOT AT ALL | 92 8 | 76 24 | 39 61 | 89 11 |
| <u>SENSE OF ACCOMPLISHMENT GAINED FROM WORK:</u> | | | | |
| SATISFIED | 86 | 58 | 58 | 78 |
| NEUTRAL | 6 | 10 | 13 | 22 |
| DISSATISFIED | 8 | 32 | 29 | 22 |
| <u>REENLISTMENT INTENTIONS:</u> | | | | |
| YES, OR PROBABLY YES | 64 | 50 | 53 | 56 |
| NO, OR PROBABLY NO | 26 | 16 | 20 | 44 |
| WILL RETIRE | 10 | 34 | 27 | 0 |

IMPLICATIONS

This survey was initiated to provide current job and task data for use in evaluating the AFMAN 36-2108 *Specialty Description* and appropriate training documents.

Overall, survey data for the Biomedical Equipment Maintenance career ladder reflect a well functioning career ladder. Seventy-five percent of the job incumbents perform a core job relating to maintenance of various medical equipment across the Air Force. Good career ladder progression can be seen as one moves from the 3-skill level to the 9- or CEM-skill level. Job satisfaction appears to be extremely high among most personnel. Only Facility Manager incumbents showed any major problems related to their job satisfaction, especially in the perceived utilization of training. A comprehensive review of the STS found that most paragraphs were supported by the survey data. However, several paragraphs need to be reviewed for possible fine-tuning of content and 3-skill level proficiency codes.

APPENDIX A

SELECTED REPRESENTATIVE TASKS PERFORMED BY
SPECIALTY JOB GROUPS

THIS PAGE INTENTIONALLY LEFT BLANK

TABLE A1
BIOMEDICAL EQUIPMENT TECHNICIAN CLUSTER
(ST0016)

| TASKS | | PERCENT MEMBERS PERFORMING (N=321) |
|-------|--|---|
| E257 | Perform preventive maintenance on pulse oximeters | 96 |
| D174 | Perform electrical safety tests on medical equipment | 95 |
| E255 | Calibrate or verify calibration of pulse oximeters | 95 |
| G848 | Calibrate or confirm calibration of defibrillators | 94 |
| G850 | Perform preventive maintenance on defibrillators | 93 |
| E274 | Perform preventive maintenance on automatic blood pressure cuffs | 93 |
| E222 | Calibrate or verify calibration of electrocardiogram (ECG) monitors | 92 |
| E272 | Calibrate or verify calibration of automatic blood pressure cuffs | 91 |
| E225 | Perform preventive maintenance on ECG monitors | 91 |
| C127 | Locate stock numbers or components in manufacturers' parts, manuals or supply publications | 90 |
| C187 | Solder electrical connections | 90 |
| E349 | Perform preventive maintenance on electronic thermometers | 90 |
| E347 | Calibrate or verify calibration of electronic thermometers | 89 |
| D173 | Perform initial inspections of new medical equipment | 88 |
| C137 | Order parts or components | 88 |
| E405 | Perform preventive maintenance on vital sign monitors | 88 |
| E276 | Calibrate or verify calibration of blood pressure monitors | 87 |
| E278 | Perform preventive maintenance on blood pressure monitors | 87 |
| G836 | Perform preventive maintenance on infusion pumps | 87 |
| G834 | Calibrate or verify calibration of infusion pumps | 86 |
| C119 | Complete equipment condition tags | 84 |
| D171 | Pack or unpack medical equipment | 84 |
| C145 | Review Air Force Medical Logistics Letters (AFMLLs) | 81 |

TABLE A2
SUPERVISOR CLUSTER
(ST0030)

| TASKS | | PERCENT MEMBERS PERFORMING (N=38) |
|-------|--|--|
| A1 | Analyze workload requirements | 97 |
| C145 | Review Air Force Medical Logistics Letters (AFMLLs) | 95 |
| A11 | Determine general logistics requirements, such as space, personnel, equipment or supplies | 92 |
| A10 | Counsel personnel, other than for training | 92 |
| C121 | Draft outgoing correspondence | 89 |
| A54 | Interpret policies, directives, or procedures for subordinates | 89 |
| A12 | Determine work priorities | 89 |
| A61 | Plan equipment installations or modifications | 89 |
| A78 | Write EPRs | 87 |
| A5 | Coordinate equipment procurement with Director of Medical Logistics Management or Base Procurement Office | 87 |
| A30 | Evaluate budget requirements | 84 |
| A38 | Evaluate personnel for compliance with performance standards | 84 |
| A32 | Evaluate directives or operating procedures | 84 |
| A68 | Schedule personnel for schools, temporary duty (TDY) assignments, or nontechnical training | 82 |
| A71 | Supervise Biomedical Equipment Journeymen (4A251) (formerly AFSC 91850) | 79 |
| A33 | Evaluate inspection report findings | 79 |
| A63 | Plan or prepare briefings | 79 |
| A72 | Supervise Biomedical Equipment Craftsmen (4A271) (formerly AFSC 91870) | 76 |
| A27 | Establish performance standards | 76 |
| A36 | Evaluate new equipment | 76 |
| A69 | Select individuals for training, other than specialty training | 76 |
| C146 | Review or make entries on AF Forms 601 (Equipment Action Request) | 74 |
| A25 | Establish contractor services | 74 |
| C139 | Participate in hospital safety committee activities | 68 |

TABLE A3
FACILITY MANAGER CLUSTER
(ST0070)

| TASKS | PERCENT MEMBERS PERFORMING (N=31) |
|--|--|
| J1236 Coordinate maintenance of facilities with other agencies | 100 |
| J1250 Evaluate facility maintenance or repair requests | 97 |
| J1273 Submit work order requests to BCEs | 97 |
| J1274 Transmit service calls to BCEs | 97 |
| J1268 Prepare telecommunications work orders | 97 |
| C114 Complete AF Forms 332 (Base Civil Engineer Work Request) | 94 |
| J1238 Coordinate telecommunications acquisition, installation, and maintenance | 94 |
| J1237 Coordinate project alteration requirements with medical and BCE personnel | 94 |
| J1262 Perform service call follow-ups | 94 |
| J1232 Conduct follow-up inspections of maintenance or repair of medical activities | 90 |
| J1255 Maintain service or minor construction request logs | 90 |
| J1230 Conduct facility fire safety and security inspections | 90 |
| J1251 Inspect facilities semi-annually for environmental or safety hazards | 90 |
| J1267 Prepare single-line drawings to accompany work order requests | 90 |
| J1270 Review facility project drawings or specifications | 90 |
| A7 Coordinate maintenance functions with Civil Engineering or other maintenance activities | 87 |
| J1253 Maintain work request status logs | 87 |
| J1249 Evaluate construction requirements | 87 |
| A42 Evaluate safety or security programs | 87 |
| C139 Participate in hospital safety committee activities | 84 |
| J1257 Oversee construction projects | 84 |
| J1242 Determine installation or operational requirements for new equipment | 84 |
| J1246 Direct maintenance of medical facility grounds | 81 |
| D167 Inspect facilities for adequate utilities | 74 |

TABLE A4
INSTRUCTOR CLUSTER
(ST0028)

| TASKS | | PERCENT MEMBERS PERFORMING (N=9) |
|-------|--|---|
| B88 | Develop lesson plans | 100 |
| B104 | Prepare training aids | 100 |
| B111 | Write test questions | 100 |
| B84 | Conduct resident course classroom training | 89 |
| B107 | Score tests | 89 |
| B81 | Administer tests | 89 |
| B102 | Maintain training records, charts, or graphs | 67 |
| B96 | Evaluate progress of resident course students | 67 |
| A38 | Evaluate personnel for compliance with performance standards | 67 |
| B86 | Counsel trainees on training progress | 67 |
| B106 | Procure training aids, space, or equipment | 67 |
| B85 | Conduct training conferences or briefings | 56 |
| B101 | Maintain training equipment | 44 |
| B90 | Direct or implement training programs | 44 |
| B87 | Determine training requirements | 44 |
| B95 | Evaluate personnel for training needs | 44 |
| B99 | Evaluate training methods, techniques, or programs | 44 |
| C145 | Review Air Force Medical Logistics Letters (AFMLLs) | 44 |
| A54 | Interpret policies, directives, or procedures for subordinates | 44 |
| D187 | Solder electrical connections | 44 |
| B89 | Develop resident course or career development course | 33 |
| C125 | Inventory equipment, tools, or supplies | 33 |
| D174 | Perform electrical safety tests on medical equipment | 22 |
| B110 | Write justifications for training facilities, equipment, publications, or materials | 22 |